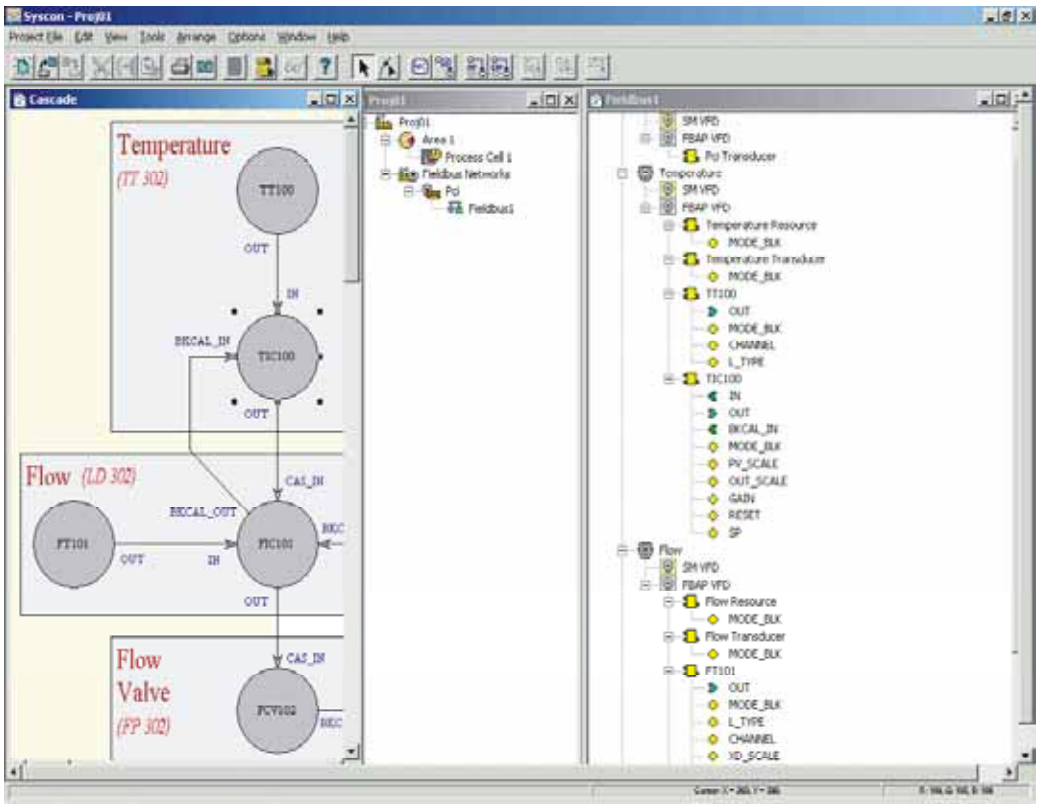
SYSCON - SYSCON

smar FIRST IN FIELDBUS

INSTALLATION AND OPERATION MANUAL

SYSCON - SYSTEM CONFIGURATOR



MAR / 04

SYSCON

VERSION 5.22

FOUNDATION™

SYSCONME

smar

web: www.smar.com

Specifications and information are subject to change without notice.
For the latest updates, please visit the SMAR website above.

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Introduction

SYSCON - System Configurator - is a software tool especially developed to configure, maintain and operate the newest **SMAR** Fieldbus products line, by a Personal Computer with a Fieldbus interface.

The friendly Man-Machine Interface (MMI) of the SYSCON provides an efficient and productive interaction with the user, without previous knowledge of the software. The use of the Fieldbus protocol provides interoperability between the system and each piece of equipment. The physical interface with the field network - the PCI (Process Control Interface) Board or the DFI (Fieldbus Universal Bridge) - is connected to a PC bus: equipment especially developed by **SMAR** for its Fieldbus line.

SYSCON runs on Microsoft® Windows NT™ Operating System, version 4.0 or later, or Windows 2000.

This manual refers to the version 5.22 of SYSCON.

This new version intends to improve the robustness and the stability of SYSCON.

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1 Getting Started

1.1 System Requirements

1.1.1 Minimum:

Operational System	⇒	Windows NT 4.0 - Service Pack 6a or Windows 2000 - Service Pack 3
Processor	⇒	Pentium 233 MHz
RAM	⇒	64 MB
Free HDD Space	⇒	20 MB
Display	⇒	800x600 - 64 KColors
CD-ROM		

1.1.2 Recommended:

Operational System	⇒	Windows NT 4.0 - Service Pack 6a or Windows 2000 - Service Pack 3
Processor	⇒	Pentium 350 MHz
RAM	⇒	128 MB
Free HDD Space	⇒	20 MB
Display	⇒	1280x1024 - True Color
CD-ROM		

1.2 Preparing the Installation

It is recommended to uninstall any older versions of SYSCON before installing new versions.

Follow these steps to remove the application:

1. From the *Start* menu, select *Settings* - *Control Panel*.
2. Double-click the *Add/Remove Programs* icon. The *Add/Remove Programs Properties* dialog box will open.
3. Select the item *Syscon* from the list of programs.
4. Click Add/Remove.

5. Click *Yes* to confirm that SYSCON is to be removed.

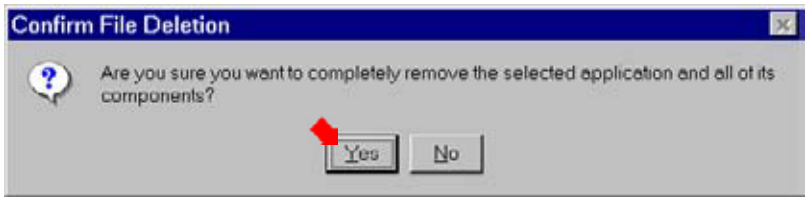

Confirm File Deletion
Are you sure you want to completely remove the selected application and all of its components?
Yes
No

Figure 1.1. Confirm File Deletion

6. Wait a few minutes for the uninstall program to indicate that the process is complete. Click Ok.

Remove Programs From Your Computer
uninstallShield will remove the software 'Syscon' from your computer. Please wait while each of the following components is removed.
Shared program files...
Standard program files...
Folder items...
Program folders...
Program directories...
Program registry entries...
Uninstall successfully completed.
OK

Figure 1.2. Uninstall Completed

1.3 Installing SYSCON

Place the SYSTEM302 CD installation at the CD-ROM drive. The *Installation* dialog box will open automatically.

Click the *System302* button.

Follow the instructions in the dialog boxes to complete the installation. It will install SYSCON and other programs that compound *System302*, such as *Device Support* and *OLE Server*.

To initialize SYSCON click the Windows *Start* button, at the *Task Bar*, point the cursor to the item *Programs*, then point it to the item *System302*. Finally, click the item *Syscon*, as indicated in the next figure:

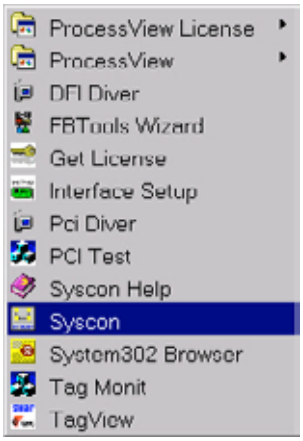


Figure 1.3. Starting SYSCON

At the first time working with SYSCON, the *License Information* dialog box will appear:

Figure 1.4. License Information Dialog Box

Run the *Get License* software, click the *Generate FaxBack* button and fill in the form. Fax the completed FAX-BACK form to **SMAR** using the Fax number listed on the ***FaxBack.txt*** file. **SMAR** will issue the user a *License Key* to authorize the installed product.

Type the license key in the *Syscon License Key* box and click the *Grant License Keys* button. After the user finished granting the *License Keys*, click *Exit*.

Now, the user can finally start using SYSCON 5.22.

2 Using SYSCON 5.22

2.1 Working with Project Files

2.1.1 New Project

To create a *Project File*, go to the *Project File* menu and click *New*, as the following figure shows:

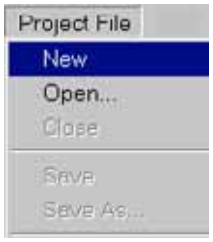


Figure 2.1. Project File Menu: New

The *Document Type* box will appear. Click the option *Projects*, as indicated below:

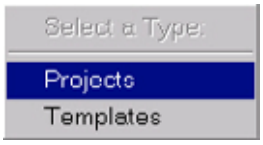


Figure 2.2. Select the File Type

The *New Project* dialog box will open:

1. Choose the folder where the project will be saved.
2. Type the name for the project in the *File Name* box.
3. Click *Save*. If the new project is not to be created, click *Cancel*.

See the following figure:

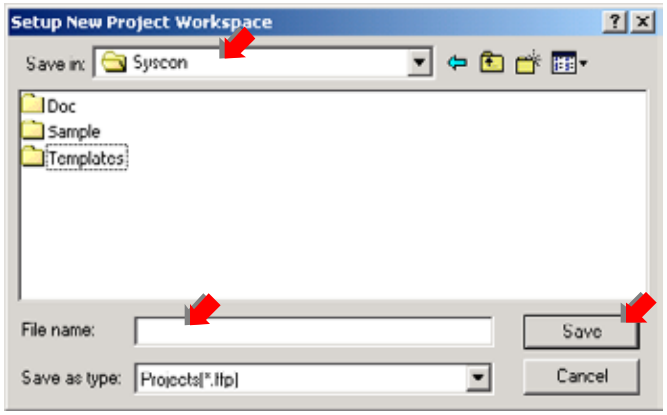


Figure 2.3. New Project Dialog Box

SYSCON will automatically create a folder with the name the user typed for the project inside the folder selected.

Shortcuts:

Toolbar:

Since the new project has been created, the *Project* window will open:

Figure 2.4. Project Window

This window contains icons for the *Logical Plant* - named as **Area1**, and for the *Physical Plant* - named as **Fieldbus Networks**. In order to begin working in the project, read first one of the sections: ***Creating a Logical Project*** or ***Creating a Physical Project***.

2.1.2 Open

To open an existing *Project*, go to the *File* menu and click *Open*, as in the following figure:

Figure 2.5. Project File Menu: Open

The *Open* dialog box will open:

1. In the *Look in* box, select the folder that contains the project file to be opened.
2. Click on the project file icon or type its name in the *File name* box.
3. Click *Open* to conclude this task.

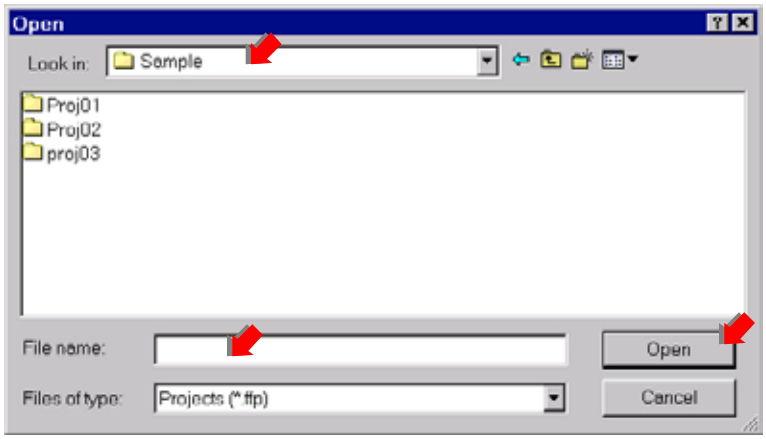


Figure 2.6. Open Project Dialog Box

Shortcuts:

Toolbar:

Checking the version

Starting from version 5.10, SYSCON verifies if the configuration file was generated by previous or later versions.

If the user is trying to open a configuration file that was generated in an older version of SYSCON, the following message will open:

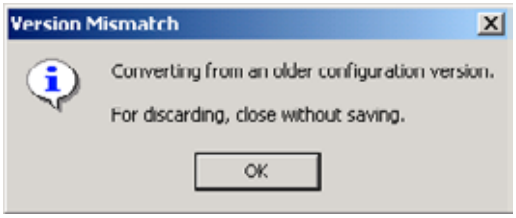


Figure 2.7. Version Mismatch Message Box

To upgrade the configuration, go to the *Project File* menu and click *Save as*, typing a new name for the project or using the same name to override the old project.

If the user upgrades the configuration converting it to the new file format, it won't be possible to open the configuration in an older version of SYSCON again.

If SYSCON detects that the user is trying to open a configuration file that was generated in a newer version, the following message will open:

Figure 2.8. Version Mismatch Message Box

NOTE
Pay close attention to this new characteristic because it only exists starting from version 5.10!

IMPORTANT
Versions prior to 5.10 do not verify the configuration file. Those versions will open the project file generated in a newer version causing no error warnings, but the consistency of the project will not be assured.

2.1.3 Save

To save the changes made to the *Project* or any of its parts, such as the *Process Cell* window or the *Strategy* window, go to the *Project File* menu and click *Save*, as the following figure shows:

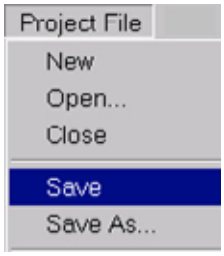


Figure 2.9. Project File Menu: Save

Shortcuts:

Toolbar:

This procedure will save the changes made in the window that has the focus of the application.

REMEMBER
Anytime the *Project* configuration changes, do not forget to save.

2.1.4 Save As

To save the *Project* with another name, go to the *Project File* menu and click *Save as*, as in the following figure:

Figure 2.10. Project File Menu: Save As

The *Save As* dialog box will open:

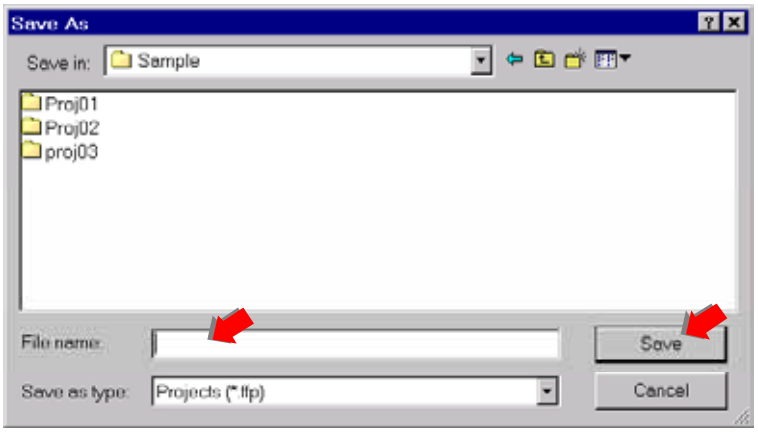


Figure 2.11. Save As Dialog Box

Type a new name for the *Project* and click *Save*. A new folder will be created with the name of the *Project* file and the files related to the *Project* will be stored in this folder.

2.1.5 Save Entire Configuration

Use this option to save the entire plant project configuration. Go to the *Project File* menu and click *Save Entire Configuration*, as in the following figure:

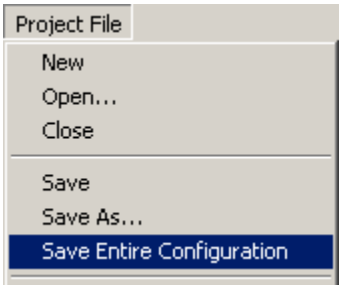


Figure 2.12. Project File Menu: Save Entire Configuration

Shortcuts:

Toolbar:

NOTE
A *Template* is not part of the plant project configuration. It is necessary to set the focus on the *Template* window and click the *Save* button, , to save the changes made to the template configuration.

2.1.6 Close

To close the *Project*, click on the *Project* window, in case the focus is on another application window, go to the *File* menu and click *Close*, as in the following figure:

Figure 2.13. Project File Menu: Close

Or go to the *Window* menu and click *Close All*, as the following figure shows:

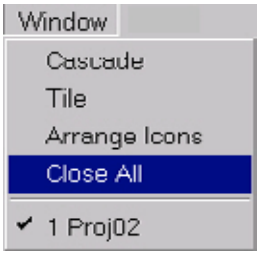


Figure 2.14. Window Menu: Close All

A quick way of closing a *Project* is to click on the Close button, , in the upper right corner of the *Project* window.

Do not forget to save the *Project* before closing.

2.1.7 Print

This section will show SYSCON's printing options. These options can be found at the *Project File* menu. See the following figure:

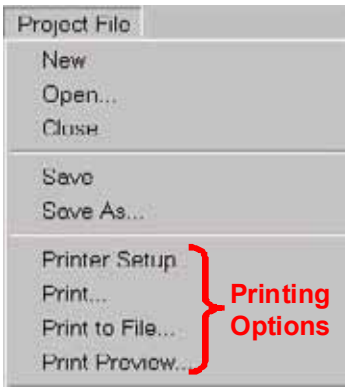


Figure 2.15. Project File Menu: Print Options

Printer Setup

This option is available to the *Project* window, to the *Strategy* window and to the *Topology* window. The user can configure page and printer options.

Click this item to open the *Page Setup* dialog box. See the following figure:

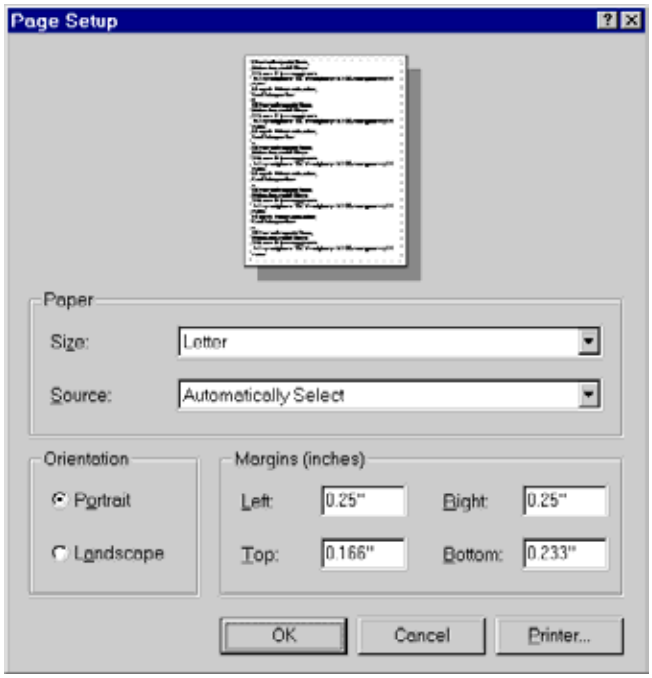


Figure 2.16. Page Setup Dialog Box

At the top of the dialog box there's an example that shows how the page layout will look like. As the options change, the page layout example will change.

Paper:

- Select the size of the paper or envelope to be used in the *Size* box.
- Select where the paper to be used is located in the printer in the *Source* box. Different printer models support different paper sources, such as the upper tray, envelope feed, and manual feed.

Orientation: select the page orientation and how the document is positioned on the page. To see a preview on the example page at the top of the dialog box, check the *Portrait* box or the *Landscape* box.

Margins (inches): set the printing area of the page, typing a value for the left, right, top and bottom margin.

Click on the *Ok* button to close the *Page Setup* dialog box and save the changes.

Click on the *Cancel* button to close the *Page Setup* dialog box without saving any changes.

Click on the *Printer* button to open the *Printer Setup* dialog box and change the printer options. See the following figure:

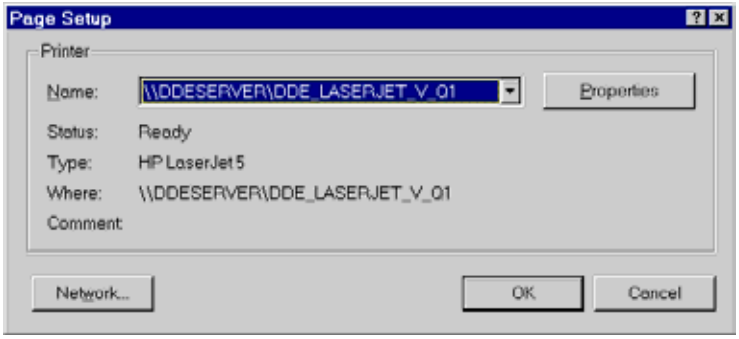


Figure 2.17. Printer Setup Dialog Box

At the *Printer* rectangle, select the printer in the *Name* box. Click the *Properties* button to set up options for the printer. The *Printer* rectangle also shows information about the selected printer.

Click on the *Ok* button to close the dialog box and save the changes.

Click on the *Cancel* button to close the dialog box without saving any changes.

Printing the Project Configuration

When the user clicks on the *Project* window and selects the option *Print*, or clicks the *Print* button, , on the *General Operation* toolbar, the *Print Configuration* dialog box will open. The items of the project to be printed can be chosen. See the following figure:

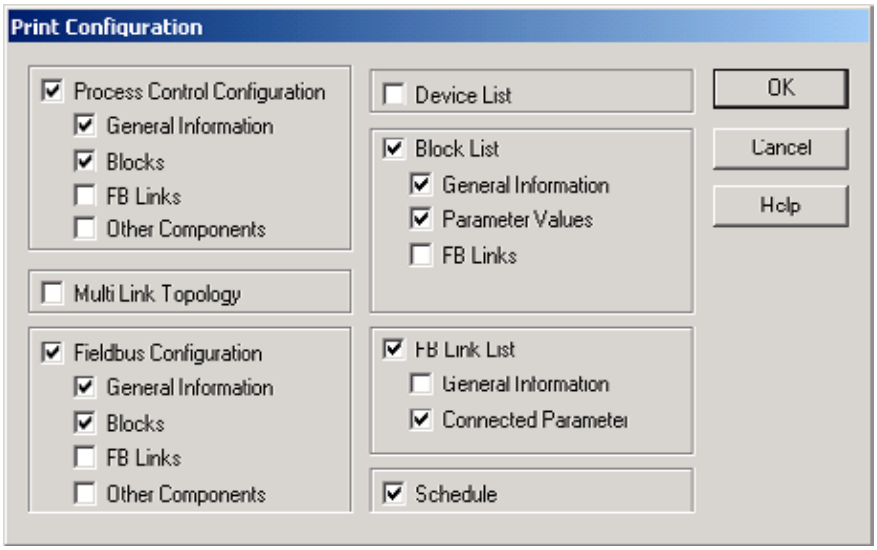


Figure 2.18. Print Configuration Dialog Box

Process Control Configuration: Select this item to print the information about the *Process Control Configuration*.

General Information: prints the general information about the configuration.

Blocks: prints the information about the blocks, listed by *Control Modules*.

FB Links: prints the information about the links between those blocks.

Other Components: prints further information about the *Process Control Configuration*.

Multi Link Topology: Select this item to print the information about the topology, with the *Bridges* and *Fieldbuses*.

Fieldbus Configuration: Select this item to print the information about the *Fieldbus Configuration*.

General Information: prints the information about the configuration.

Blocks: prints the information about the blocks, listed by *Devices*.

FB Links: prints the information about the links between those blocks.

Other Components: prints further information about the *Fieldbus Configuration*.

Device List: Select this item to print the information about the *Devices* and their attributes.

Block List: Select this item to print the information about the *Blocks*.

General Information: prints the information about *Blocks*, their attributes and location.

Parameter Values: prints the information about the parameters configured for the *Blocks*.

FB Links: prints the information about the connected parameters.

FB Link List: Select this item to print the list with all of the links in the configuration.

General Information: prints the general information about the links.

Connected Parameter: prints the information about the parameters.

Schedule: Select this item to print the information about the *Schedule*, including both *Function Block Execution Schedule* and *Traffic Schedule*.

Click on the *Ok* button to close this dialog box and print the project configuration.

Click on the *Cancel* button to close the dialog box without printing the project configuration.

Click on the *Help* button to open the *Help* window.

Printing the Strategy Drawing

When the user clicks on the *Strategy* window and selects the option *Print*, or clicks the *Print* button, , on the *General Operation* toolbar, the *Print* dialog box will open and the printer options can be configured. See the following figure:

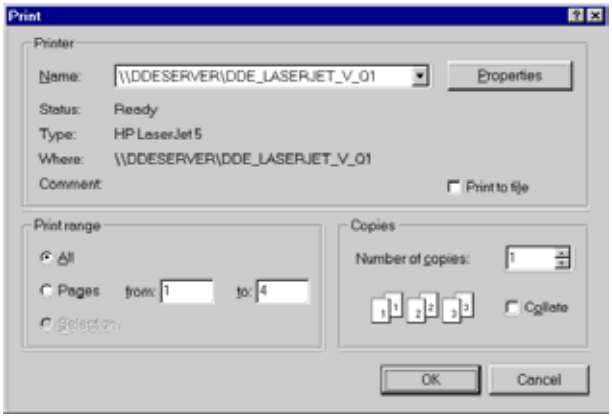


Figure 2.19. Print Dialog Box

Printer: shows information about the selected printer.

- Select the printer in the *Name* box.
- Click on the *Properties* button to set up options for the printer.

Print Range: specify whether to print the entire document or specific pages.

- Click on the *All* box to print the entire drawing area.
- Click on the *Pages* box to select the pages to be printed, typing the pages number in the *from:* box and in the *to:* box.

Copies: select the number of copies to be printed.

- Type or select a number at the *Number of copies* box.
- If more than one copy is selected, check the *Collate* box to print the document sequentially. If this box is not checked, the first page will be printed as many times as it is defined by the number of copies. The same will happen to the second page and so on.

Click on the *Ok* button to close this dialog box and print the project configuration.

Click on the *Cancel* button to close the dialog box without printing the project configuration.

Printing the Fieldbus Networks Drawing

When the user clicks on the *Topology* window and selects the option *Print*, or clicks the *Print* button, , on the *General Operation* toolbar, the *Print* dialog box will open and the printer options can be configured, as describe in the section above.

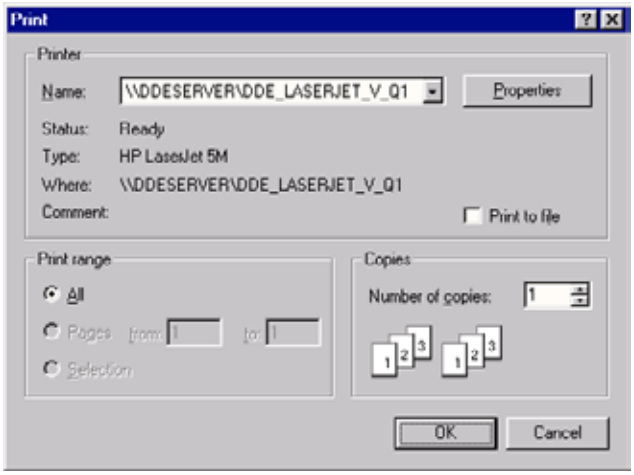


Figure 2.20. Print Dialog Box

Print to File

This option is only available on the *Project* window. When the user clicks this item, the *Print Configuration* dialog box will open. The user can choose the items of the project to be printed. (See the section *Printing the Project Configuration* above.)

When the user clicks *Ok*, the *Save As* dialog box will open:

1. In the *Save in* box, choose the folder where the file will be saved.
2. Type the name for the file in the *File name* box. The file will be saved as a Report File (**.txt*).
3. Click *Save* to conclude this task

See the following figure:

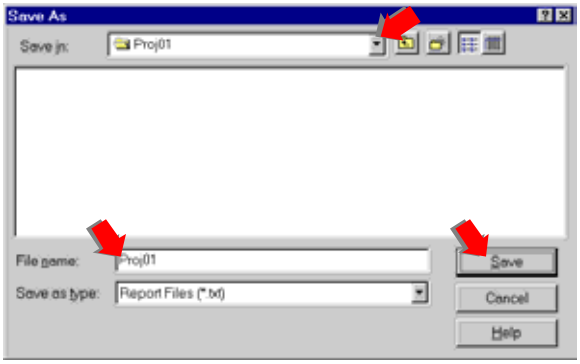


Figure 2.21. Save As Dialog Box

To print this file, open the folder that contains the file in *My Computer* or *Windows Explorer*. Select the file icon and right-click on it to activate the popup menu. Click the option *Print*. The project configuration will be printed.

Print Preview

This option is available to the *Project* window, to the *Strategy* window, and to the *Topology* window. It allows the user to view the report before printing it. Use the *Project File* menu, item *Print Preview*, or click the *Print Preview* button, , on the *General Operation* toolbar.

When the user clicks on the *Project* window and selects this item, the *Print Configuration* dialog box appears. The user can choose the items of the project to be printed. (See the section *Printing the Project Configuration* above.)

Click *Ok* and the *Preview* window will open. See the following figure:

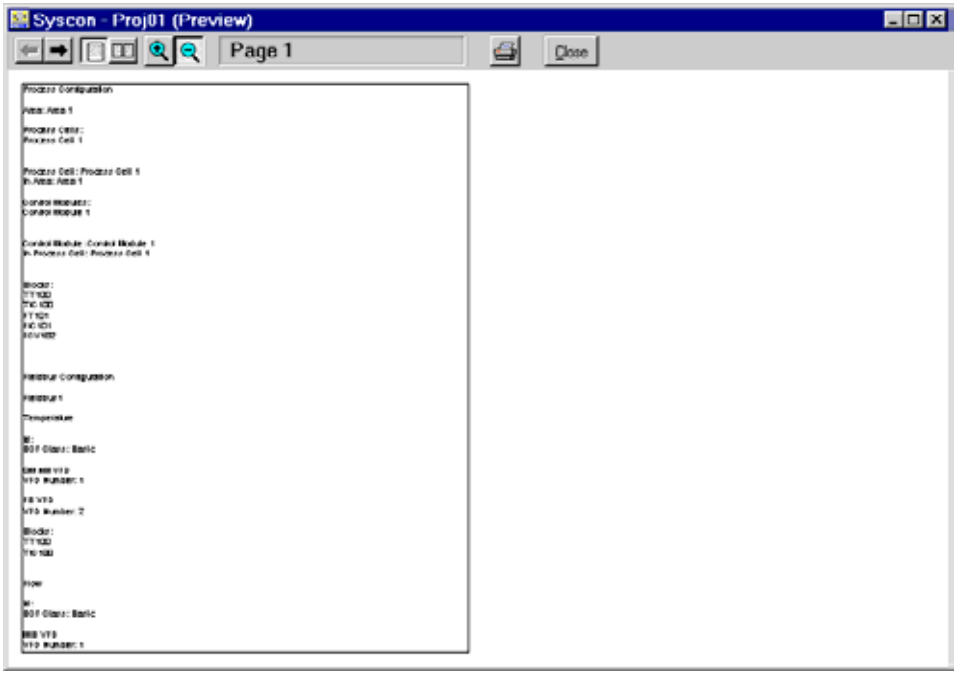


Figure 2.22. Print Preview: Project Window

The *Preview* window has its own toolbar:

Figure 2.23. Print Preview Toolbar

Read a brief explanation about the buttons:

Click this button to view the anterior page.

Click this button to view the next page.

Click this button to view the entire page in the screen.

Click this button to view two pages, at the same time, in the screen.

Click this button to activate the *Zoom* tool. Click over the page to increase the visualization size.

Click this button to deactivate the *Zoom* tool. Click over the page to decrease the visualization size.

This box shows the page(s) that are being visualized at the moment.

Click this button to print the report. It will open the *Print* dialog box.

Click this button to close the *Preview* window and return to the SYSCON browser.

When the user clicks on the *Strategy* window and selects this item, the *Preview* window automatically appears. See the following figure:

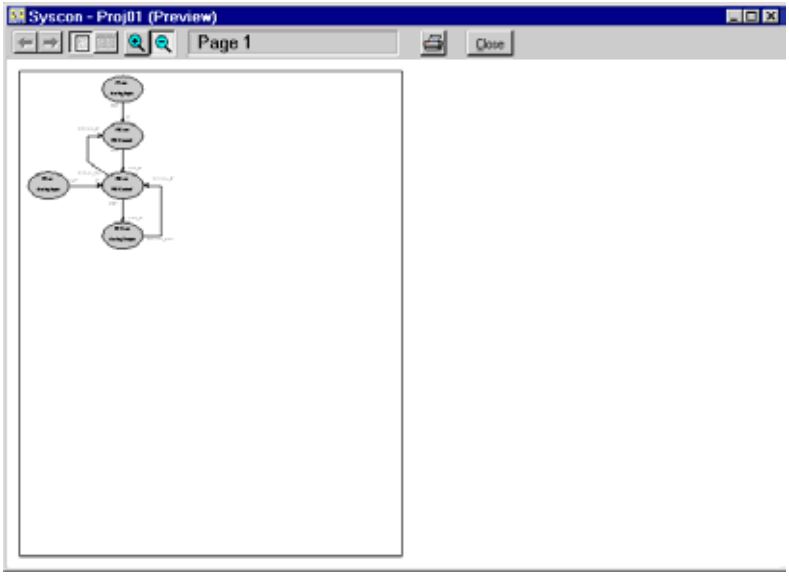


Figure 2.24. Print Preview: Strategy Window

When the user clicks the *Print* button, , the *Print* dialog box appears. Click *Ok* to print the *Strategy* drawing. (See the section *Printing the Strategy Drawing* above.)

2.2 Preferences

To set the *Project* preferences, go to the *Project File* menu and click *Preferences*, as the following figure shows:

Figure 2.25. Project File Menu: Preferences

The *Preferences* dialog box will open:

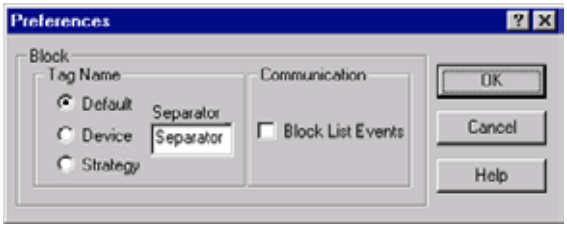


Figure 2.26. Preferences Dialog Box

Tag Name: choose one of the options for the *Block* tag name generation:

Default: when creating a *Block*, attached to the Strategy or to the Device, its tag will have the default format: ["block" + id number].

Device: when creating a new *Block*, attached to the Device, its tag will have the Device tag concatenated with the *Block* mnemonic and an internal sequential number: [device tag + separator + block mnemonic + id number].

Strategy: when creating a new *Block*, attached to the Strategy, its tag will have the Strategy tag concatenated with the *Block* mnemonic and an internal sequential number: [strategy tag + separator + block mnemonic + id number].

See the section *Automatic Block Tag Generation* for further details.

Communication: enable the Automatic Checking for the *Block* events by selecting the *Block List Events* option. The Automatic Checking verifies if the list of *Blocks* attached to the *Device* match the list of *Blocks* attached to the corresponding *Device* in the field, for all *Devices* on the *Fieldbus* windows that are open. If this option is not selected, the Checking will be executed when the user opens the *Block List*.

NOTE

It is necessary to re-initialize the communication every time the *Preferences* for the *Block List Events* option change, so the changes will take effect.

2.2.1 Automatic Block Tag Generation

When the user creates a new *Block* and does not define a tag to it, the tag is automatically generated and assigned to the *Block*, based on the *Preferences* settings.

Default Block Tag

The default tag for a new *Block* is describe as follow:

```
["Block" + id number]
```

Where:

`Block:`	the default text for a *Block*.
`id number:`	a sequential number that identifies the *Block* internally in the Project.

Block Tag Based On Device Tag

When the tag generation is based on the *Device* tag, if a new *Block* is created in a *Device* and the user does not define a tag to it, then the *Block* tag will have the following format:

```
[device tag + separator + block mnemonic + id number]
```

Where:

`device tag:`	the tag of the *Device* where the *Block* is attached to.
`separator:`	a set of alphanumeric characters that separates the name of the *Device* from the name of the *Block*.
`block mnemonic:`	a set of characters related to the *Block* type.
`id number:`	a sequential number that identifies the *Block* internally in the Project.

NOTE

If the user changes the *Device* tag, the tag of all *Blocks* attached to this *Device* will be updated based on the new *Device* tag.

If the *Block* is moved from one *Device* to another, its tag will be automatically updated based on the tag of the destination *Device*.

If a new *Block* is created in the *Strategy* and the user does not define a tag to it, the *Block* tag will be generated based on the *Strategy* tag since the *Block* is not attached to any *Device* yet. Once the user attaches the *Block* to a *Device*, the *Block* tag will be automatically updated based on this *Device* tag.

Yet, if a *Block* is detached from a *Device*, the *Block* tag will be updated again based on the *Strategy* tag.

NOTE

The general rule is if the *Block* is not attached to a *Device* but is attached to a *Strategy*, the *Block* tag will be automatically generated based on the *Strategy* tag, even if the tag generation method chosen is based on *Device* tag.

Block Tag Based On Strategy Tag

When the tag generation is based on the *Strategy* tag, if a new *Block* is created in a *Strategy* and the user does not define a tag to it, then the *Block* tag will have the following format:

```
[strategy tag + separator + block mnemonic + id number]
```

Where:

`strategy tag:`	the tag of the *Strategy* where the *Block* is attached to.
`separator:`	a set of alphanumeric characters that separates the name of the *Strategy* from the name of the *Block*.
`block mnemonic:`	a set of characters related to the *Block* type.
`id number:`	sequential number that identifies the *Block* internally in the Project.

NOTE

If the user changes the *Strategy* tag, the tag of all *Blocks* attached to this *Strategy* will be updated based on the new *Strategy* tag.

If the *Block* is moved from one *Strategy* to another, its tag will be automatically updated based on the tag of the destination *Strategy*.

If a new *Block* is created in the *Device* and the user does not define a tag to it, the *Block* tag will be generated based on the *Device* tag since the *Block* is not attached to any *Strategy* yet. Once the user attaches the *Block* to a *Strategy*, the *Block* tag will be automatically updated based on this *Strategy* tag.

Yet, if a *Block* is detached from a *Strategy*, the *Block* tag will be updated again based on the *Device* tag.

NOTE

The general rule is if the *Block* is not attached to a *Strategy* but is attached to a *Device*, the *Block* tag will be automatically generated based on the *Device* tag, even if the tag generation method chosen is based on *Strategy* tag.

2.3 List of Blocks

SYSCON can export and import a list of *Blocks* in the *Exchange File Format*.

The user must provide the file to be exported, or imported, with the tags of the *Blocks*.

2.3.1 Export the List of Blocks

To export the list of *Blocks*, go to the *Project File* menu and click *Export List of Blocks*, as the following figure shows:

Figure 2.27. Project File Menu: Export List of Blocks

The dialog box will open:

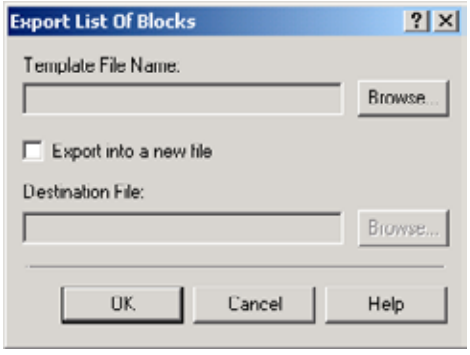


Figure 2.28. Export List of Blocks dialog box

Click the *Browse* button to search for the *Export Template File*, assuming that the user has previously created the file with the tags of the *Blocks*.

Select the option *Export into a new file* to create a new file for the list of *Blocks*. Then select the destination file clicking the corresponding *Browse* button.

Click *Ok* to export the list of *Blocks* and conclude this task.

2.3.2 Import the List of Blocks

To import the list of *Blocks*, go to the *Project File* menu and click *Import List of Blocks*, as the following figure shows:

Figure 2.29. Project File Menu: Import List of Blocks

The dialog box will open:

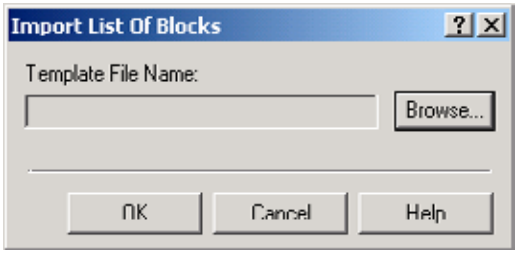


Figure 2.30. Export List of Blocks dialog box

Click the *Browse* button to search for the *Import Template File*.

Click *Ok* to import the list of *Blocks* and conclude this task.

2.4 Security

With SYSCON 5.22, it is possible to prevent the configuration file to be open by unauthorized users.

The users database must be installed with the application.

Only the user "*Administrator*" can change and configure the user's database. The *Administrator* is the default user of the *Security Manager*. It can't be removed from the list, but the password can be changed.

2.4.1 Enabling the Security

Only the *Administrator* can activate and deactivate the *Security Manager*.

Go to the *Project File* menu and click *Security*, as the following figure shows:

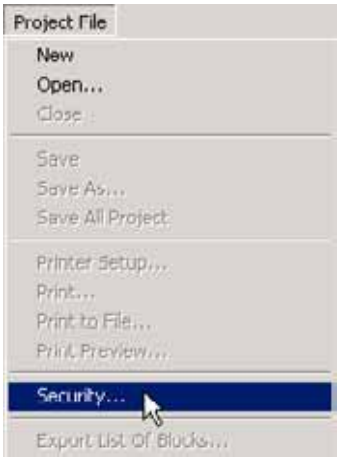


Figure 2.31. Project File Menu: Security

The *Security* dialog box will open:

1. Type *Administrator* as the *User Name*.
2. Type the *Password*.
3. Click the *Login* button.

Figure 2.32. Administrator Login

The *Active* box will become enabled.

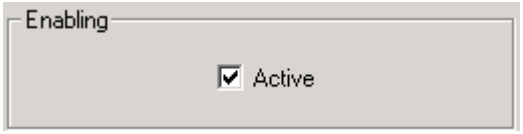


Figure 2.33. Security Manager Enabled

To activate the *Security Manager*, select the option *Active*. It will be necessary to log to the SYSCON before opening the application.

To deactivate the *Security Manager*, clear the option *Active*. The *Security Manager* will not verify users access and any user can run the SYSCON and open a configuration file.

NOTE
The *Security Manager* is deactivated by default. It is necessary to follow this procedure and activate the *Security* when using SYSCON for the first time.

2.4.2 User Login

Go to the *Project File* menu and click *Security*, as the following figure shows:

Figure 2.34. Project File Menu: Security

The *Security* dialog box will open:

Figure 2.35. Security dialog box

1. Type the *User Name*.
2. Type the *Password*.
3. Click the *Login* button.

If the information is correct, the user will be logged in the application. Click *Ok* to close the *Security* dialog box and start using SYSCON.

REMEMBER
The *User Name* and the *Password* are case sensitive.

2.4.3 User Logout

To logout from the *Security Manager*, go to the *Project File* menu and click *Security*, to open the dialog box.

Click the button *Logout*. A message box will open to confirm the operation.

2.4.4 Users Management

The user with the *Administrator* profile can change any attribute of a user.

The user with the *User* profile can only change the password.

To manage the users in the database, click the *Change* button in the *Security* dialog box.

Figure 2.36. Security dialog box

The dialog box will expand:

Figure 2.37. Security dialog box: User Attributes

The *Change Password* area is used to change the user's password. The password must have at least four alphanumeric characters.

The *User List* displays the users that can log to the SYSCON application.

The option *Enabled* is used to enable or disable an user account. When an user account is disabled, the account still exist in the database but the user will not be able to log in or run the SYSCON application.

Creating a User

Only an user with the *Administrator* profile can add users to the *Security Manager*.

To add a new user to the *User List*:

1. Type the login name for the user in the *User Name* text box.
2. Type the new password in the *New* text box and re-type the password in the *Repeat* text box.
3. Type the full name of the user in the *Name* text box.
4. Type a description of the user in the *Descr* text box.
5. Click *Add* to include the new user.

User Profile

The *Profile* option determines the type of access for the user.

Figure 2.38. Profile Options

The *Adm* profile allows the user to create, update or remove users from the database. It is not possible to change the information about the *Administrator*.

The *Mng* profile allows the user to modify the password and verify the information about the other users. It is not allowed to create, update or remove users from the database.

The *Usr* profile allows the user to log and run the SYCON application. This user doesn't have access to the information about the other users. The *Change* button will be disabled.

Updating the Attributes for the User

The user with the *Administrator* profile can change any attribute of a user.

The user with the *User* profile can only change the password.

To update the attributes for a user, select the name from the *User List*. The information about the user will be displayed in the *Security* dialog box.

The password, the profile, the name, the description and also the user name can be changed.

Enter the new information about the user and click the button *Update* to save the values.

Changing the Password

To change the password:

1. Select the name of the user in the *User List*.
2. Type the new password in the *New* text box.
3. Re-type the password in the *Repeat* text box.
4. Click *Confirm*.
5. Click *Yes* to apply the changes to the password.

Removing a User

Only an user with the *Administrator* profile can remove users from the *Security Manager*.

To remove a user from the database, select the user name in the *User List* and click the button *Remove*.

A message box will be displayed to confirm this operation. Click *Yes* to remove the user or click *No* to cancel.

NOTE
It is not possible to remove a user that is logged to the system.

3 Creating a Fieldbus Configuration

3.1 The Logical Project

3.1.1 Areas

Changing Area Attributes

To change the *Area* tag, select the *Area* icon, go to the *Edit* menu and click *Attributes*. Or activate the *Area* popup menu right-clicking its icon. Click the item *Attributes*. See the following figures:

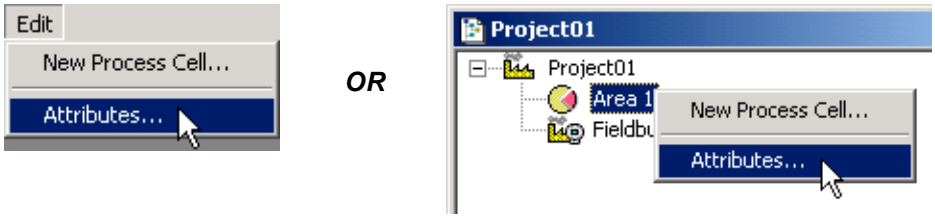


Figure 3.1. Edit Menu & Popup Menu: Area Attributes

NOTE
Using the mouse with left hand, check whether the Right Button Configuration of the mouse, on the Mouse Properties window, is set to open the "Context Menu". If not, use the Left Mouse Button to open the "Popup Menu", instead of the Right Mouse Button.

The *Area Attributes* dialog box will open. Type the new *Area* tag and click *OK*.

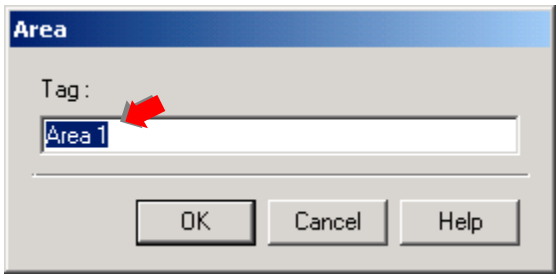


Figure 3.2. Area Attributes Dialog Box

3.1.2 Process Cells

Creating Process Cells

To create a *Process Cell*, select the *Area* icon, go to the *Edit* menu and click *New Process Cell*. Or activate the *Area* popup menu right-clicking its icon. Click the item *New Process Cell*. See the following figures:

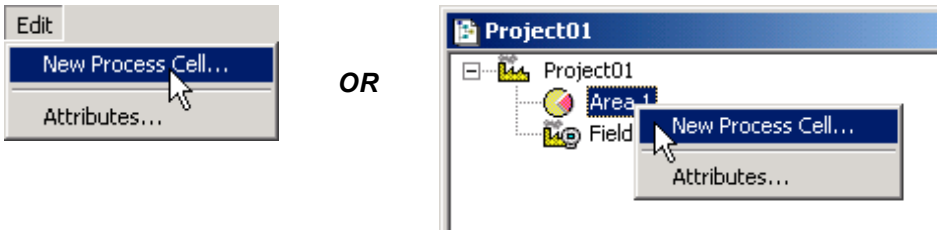


Figure 3.3. Edit Menu & Popup Menu: New Process Cell

The *Process Cell* dialog box will open. Type the *Process Cell* tag and click *OK*.

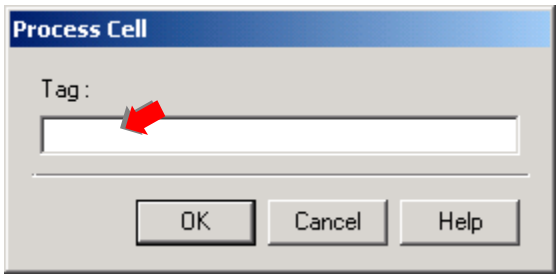


Figure 3.4. Process Cell Dialog Box

NOTE

If a new *Tag* is not typed, *Process Cell n* will be the default, where *n* is a sequential number for the *Process Cells*.

After creating the *Process Cell*, the *Project* window will look like the following figure:

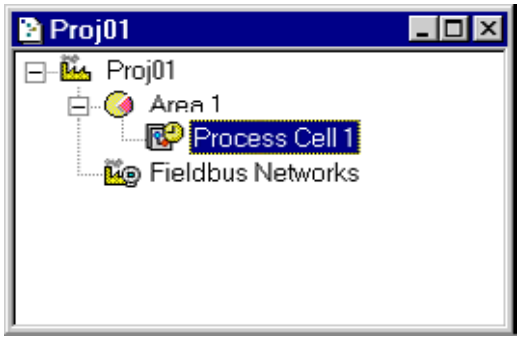


Figure 3.5. Project Window

The *Process Cell* has its own window: click the *Process Cell* icon, go to the *View* menu and click *Expand* to activate this window. Or activate the *Process Cell* popup menu right-clicking its icon. Click the item *Expand*, as indicated in the following figures:

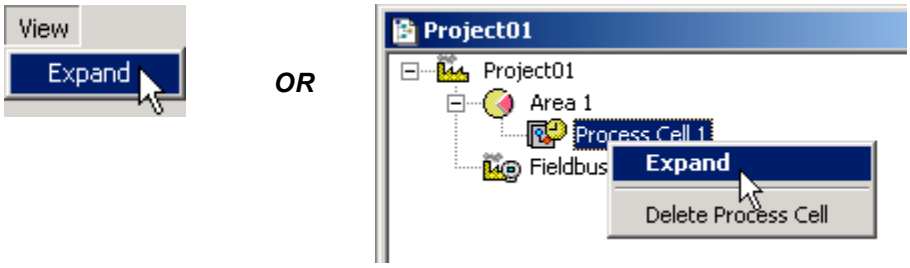


Figure 3.6. View Menu & Popup Menu: Expand Process Cell Window

The *Process Cell* window will open:

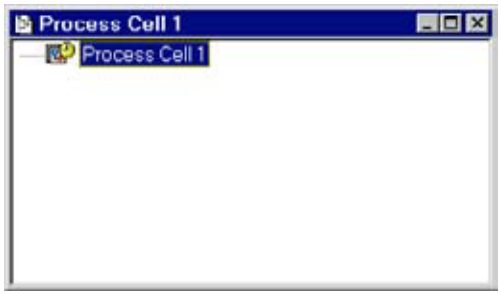


Figure 3.7. Process Cell Window

Another easy way of opening the *Process Cell* window is to double-click the *Process Cell* icon on the *Project* window.

Changing Process Cell Attributes

To change the *Process Cell* attributes, select the *Process Cell* icon on the *Process Cell* window, go to the *Edit* menu and click *Attributes*. Or activate the *Process Cell* popup menu, right-clicking its icon on the *Process Cell* window. Click the item *Attributes*. See the following figures:

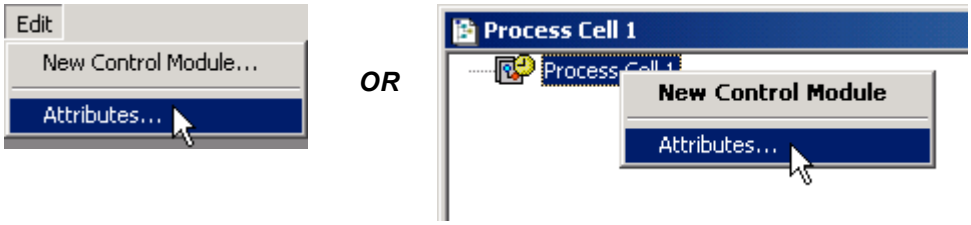


Figure 3.8. Edit Menu & Popup Menu: Process Cell Attributes

The *Process Cell* dialog box will open. Type the new *Process Cell* tag and click *OK*.

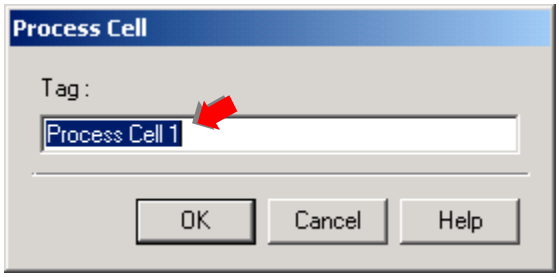


Figure 3.9. Process Cell Dialog Box

Deleting Process Cells

To remove a *Process Cell*, select its icon on the *Project* window, go to the *Edit* menu and click *Delete Process Cell*. Or activate the *Process Cell* popup menu, right-clicking its icon and selecting the item *Delete Process Cell*. See the following figures:

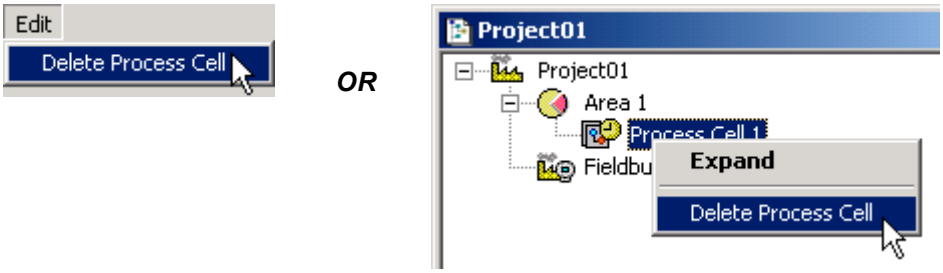


Figure 3.10. Edit Menu & Popup Menu: Delete Process Cell

A quick way of removing a *Process Cell* is to select its icon on the *Project* window and press the *Delete* key, on the keyboard.

The *Warning* dialog box will open. To confirm the deletion, click *Yes*.

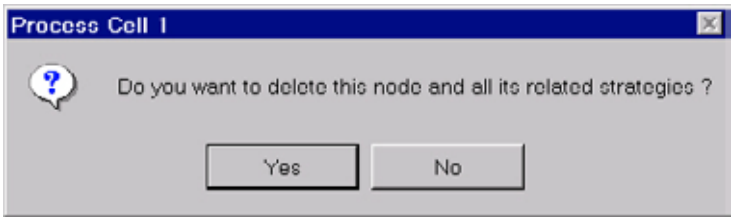


Figure 3.11. Confirm Deletion Dialog Box

NOTE
It isn't necessary to close the *Process Cell* window to remove it from the *Project*.

3.1.3 Control Modules

Creating Control Modules

To create a *Control Module*, open the *Process Cell* window and select the *Process Cell* icon. Go to the *Edit* menu and click *New Control Module*. Or activate the *Process Cell* popup menu, right-clicking its icon on the *Process Cell* window. Click the item *New Control Module*. See the following figures:

Figure 3.12. Edit Menu & Popup Menu: New Control Module

The *Control Module* dialog box will open. Type the *Control Module* tag and click *OK*.

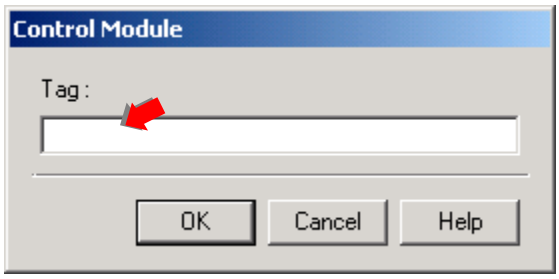


Figure 3.13. Control Module Dialog Box

NOTE
If a new *Tag* is not typed, *Control Module n* will be the default, where *n* is a sequential number for the *Control Modules*.

The *Process Cell* window will look like the following figure:

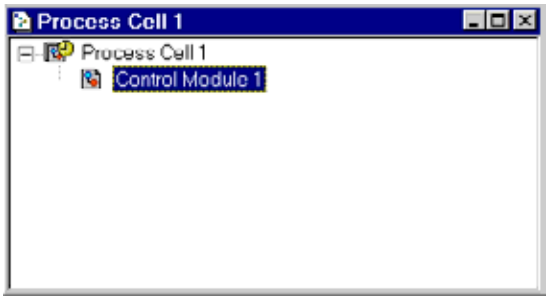


Figure 3.14. Process Cell Window

Changing Control Module Attributes

To change the *Control Module* attributes, select its icon, go to the *Edit* menu and click *Attributes*. Or activate the *Control Module* popup menu right-clicking its icon and selecting the item *Attributes*. See the following figures:

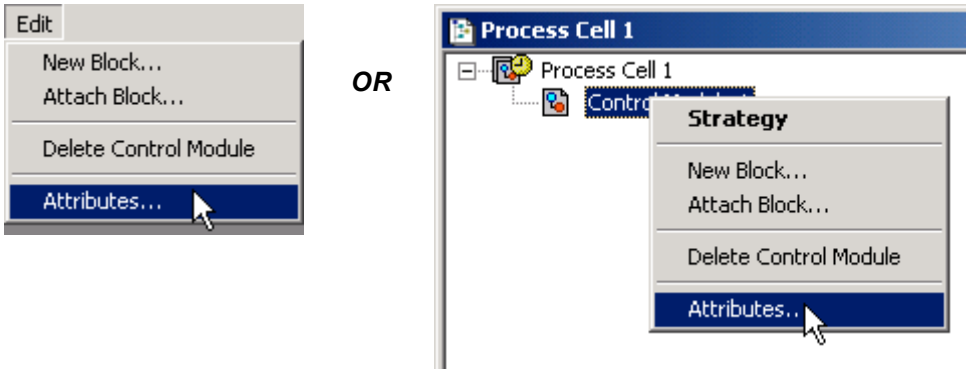


Figure 3.15. Edit Menu & Popup Menu: Control Module Attributes

The *Control Module* dialog box will open:

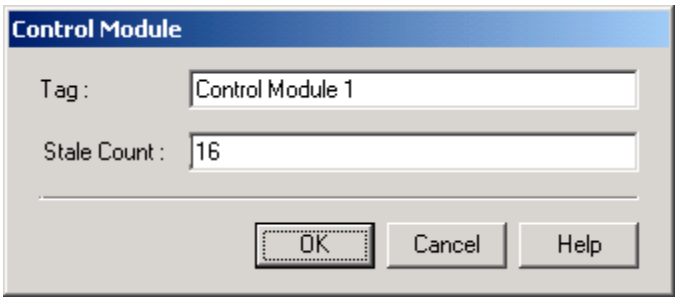


Figure 3.16. Control Module Attributes Dialog Box

Type the new *Control Module* tag.

The user can also set a value for the *Stale Count*. The *Stale Count* is the number of *Macrocycles* used to signal that the data was not updated in the *Link*.

Click *OK* to close this dialog box.

Deleting Control Modules

To remove a *Control Module* from a *Process Cell*, select its icon, go to the *Edit* menu and click *Delete Control Module*. Or activate the *Control Module* popup menu right-clicking its icon. Click the item *Delete Control Module*. See the following figures:

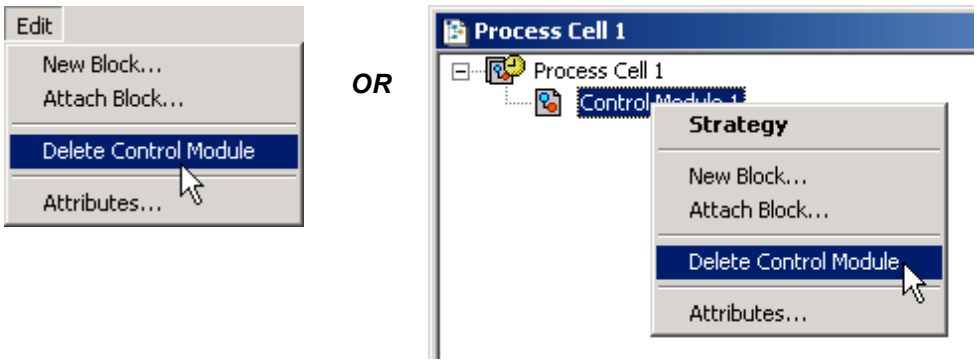


Figure 3.17. Edit Menu & Popup Menu: Delete Control Module

A quick way of removing a *Control Module* is to select its icon on the *Process Cell* window and press the *Delete* key, on the keyboard.

The *Warning* dialog box will open. To confirm the deletion, click *Yes*.

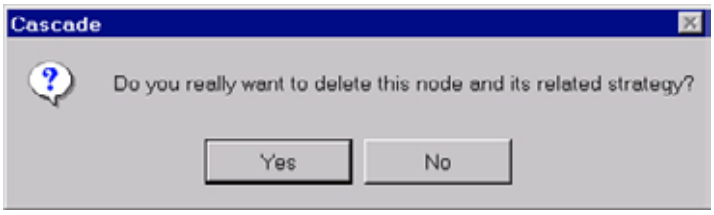


Figure 3.18. Confirm Deletion Dialog Box

3.1.4 Function Blocks

Creating Blocks

To create a *Function Block*, select the *Control Module* icon on the *Process Cell* window, go to the *Edit* menu and click *New Block*. Or activate the *Control Module* popup menu right-clicking its icon. Click the item *New Block*. See the following figures:

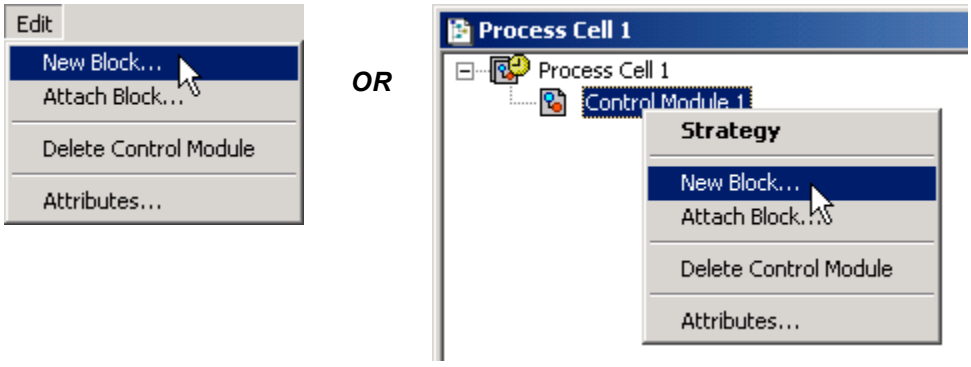


Figure 3.19. Edit Menu & Popup Menu: New Block

The *New Block* dialog box will open:

1. Select a *Block Manufacturer* from the list.
2. Select a *Device Type* provided by the manufacturer that has been selected.
3. Select the Device Revision.
4. Select the *DD Revision*.
5. Select the *CF Revision*.
6. Select a *Block Type*.
7. Type a related tag for the *Block*.
8. Click *OK*.

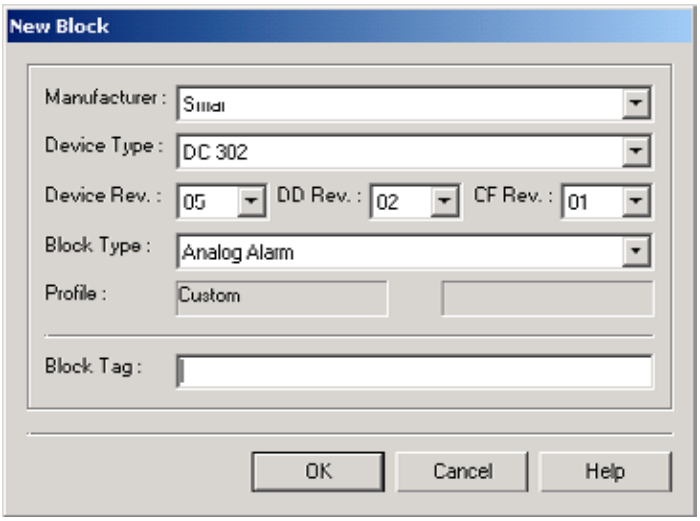


Figure 3.20. Function Block Dialog Box

NOTE

If a new *Tag* is not typed, *Block n* will be the default, where *n* is a sequential number for the *Blocks* created in the project configuration.

SYSCON uses the latest revision of the *Device Revision*, the *DD Revision* and the *CF Revision* as the default values for the new *Block*. Change these values according to the *Device* being used in the plant and its revision.

The *Process Cell* window will look like the figure below:

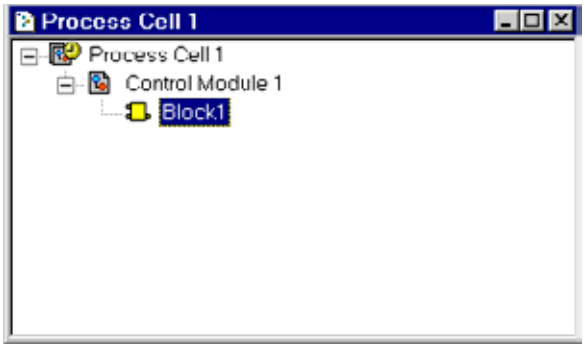


Figure 3.21. Process Cell Window

Changing Block Attributes

The only *Block* attribute that can be changed is the tag.

To change the *Block* tag, select the *Block* icon, go to the *Edit* menu and click *Attributes*. Or activate the *Block* popup menu right-clicking its icon. Click the item *Attributes*. See the following figures:

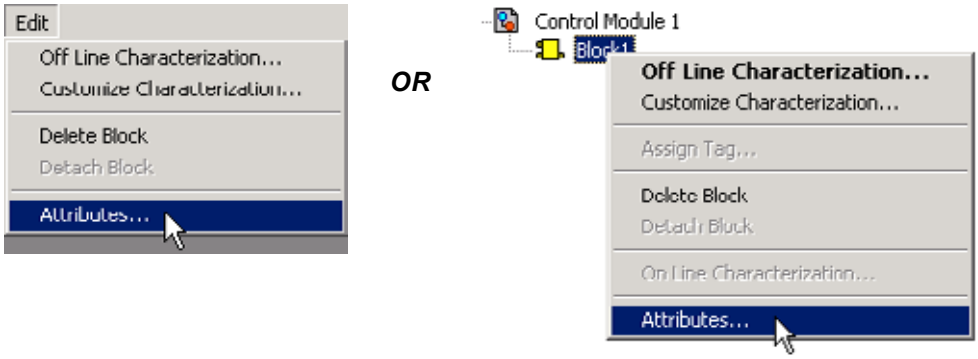


Figure 3.22. Edit Menu & Popup Menu: Function Block Attributes

The *Block Attributes* dialog box will open.

Type the new *Block* tag and click *OK*.

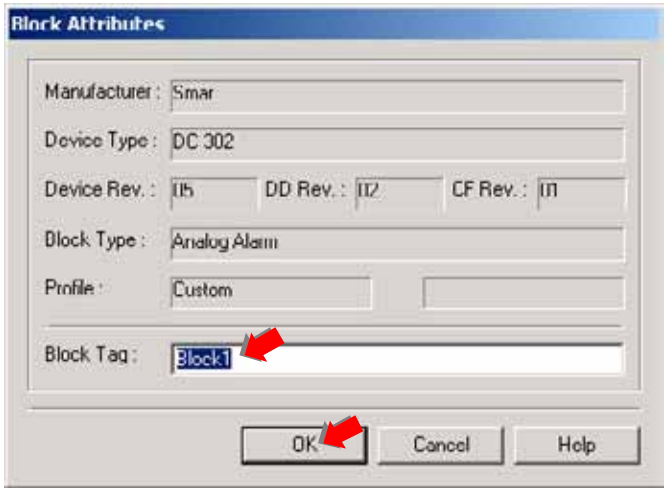


Figure 3.23. Function Block Attributes Dialog Box

Deleting Blocks

To remove a *Block* from the *Project*, select its icon, go to the *Edit* menu and click *Delete Block*. Or activate the *Block* popup menu right-clicking its icon. Click the item *Delete Block*. See the following figures:

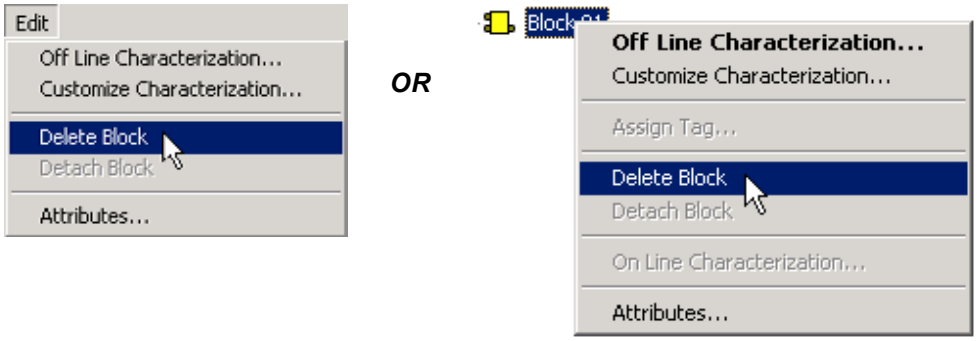


Figure 3.24. Edit Menu & Popup Menu: Delete Function Block

A quick way of removing a *Block* is to select its icon on the *Process Cell* window and press the *Delete* key, on the keyboard.

The *Warning* dialog box will open. To confirm the deletion, click *Yes*.

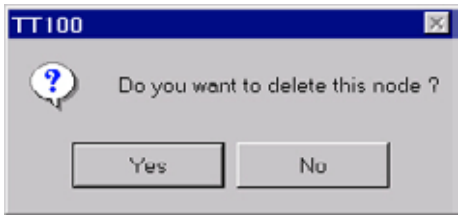


Figure 3.25. Confirm Deletion Dialog Box

NOTE
When deleting a *Block*, it will be removed from the *Project*, even if it is attached to a *Fieldbus* or drawn at the *Strategy* window.

Attaching Blocks to the Control Module

If at least one *Block* has been added to the *Physical Project* (see section *Creating Blocks* in the *Physical Project*), that *Block* can be attached to the *Control Module*.

On the *Process Cell* window, select the *Control Module* icon and attach the *Block*. Go to the *Edit* menu and click *Attach Block*. Or activate the *Control Module* popup menu right-clicking its icon. Click the item *Attach Block*. See the following figures:

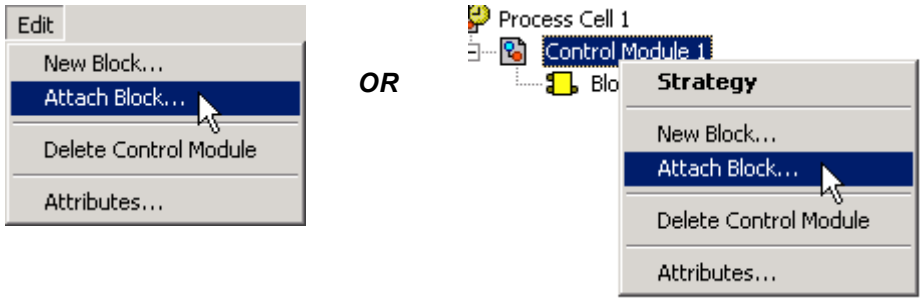


Figure 3.26. Edit Menu & Popup Menu: Attach Block

The *Attach Block* dialog box will open. Click the down arrow to select the *Block* that will be attached and click *OK* to add the *Block* to the *Logical Project*:

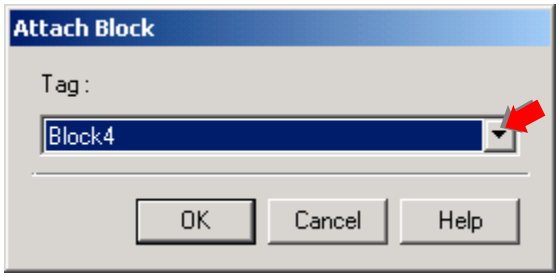


Figure 3.27. Attach Block Dialog Box

Detaching Blocks from the Control Module

A *Block* can be only detached if it exists in the *Control Module* and in the *Device*.

When detaching a *Block* from the *Logical Project*, it is removed just from the *Control Module*. The *Block* will still be attached to the *Device*.

On the *Process Cell* window, select the *Block* icon to be detached from the *Logical Project*. Go to the *Edit* menu and click *Detach Block*. Or activate the *Block* popup menu right-clicking its icon. Click the item *Detach Block*. See the following figures:

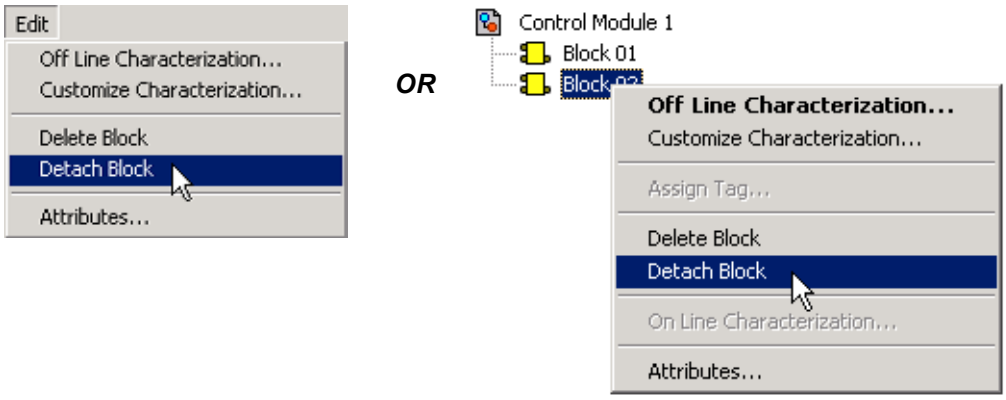


Figure 3.28. Edit Menu & Popup Menu: Detach Block

The *Warning* dialog box will open. Click *Yes* to detach the *Block*.

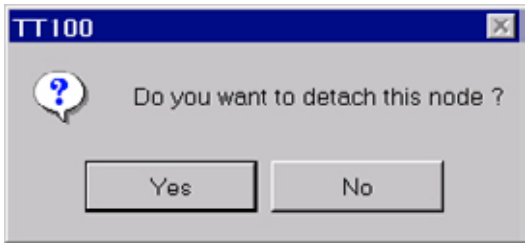


Figure 3.29. Detach Block Dialog Box

The *Block* is removed from the *Control Module* but it still exists on the *Project*, attached to the *Device*.

Dragging Blocks to the Control Module

The user can drag a *Block* from one *Control Module* to another, in the same *Process Cell* window or between different windows.

Click and hold the *Block* icon, and then drag it to the *Control Module* where it will be placed.

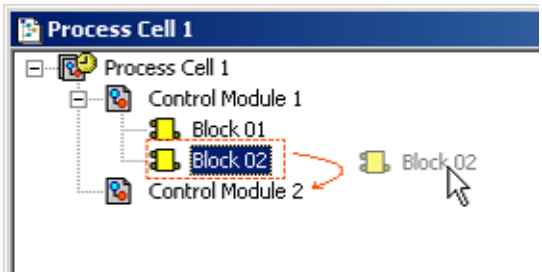


Figure 3.30. Dragging Blocks to the Control Module

Observe the following figure:

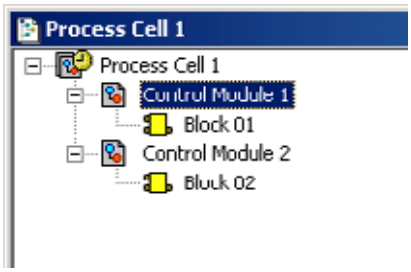


Figure 3.31. Process Cell Window

Before dragging a *Block* from a *Process Cell* window to the other, remember to tile the windows to facilitate the process. In the *Window* menu, click *Tile*.

Block Off Line Characterization

Select the *Block* to be parameterized by clicking its icon. Go to the *Edit* menu and click *Off Line Characterization*. Or activate the *Block* popup menu right-clicking its icon. Click the item *Off Line Characterization*. See the following figures:

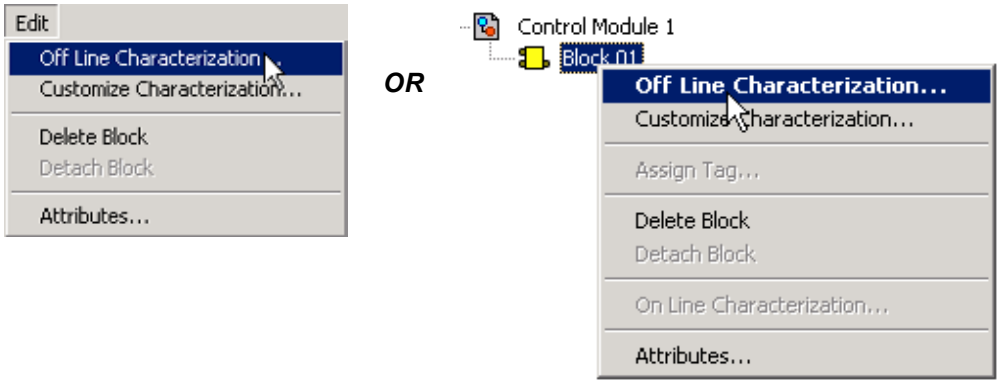


Figure 3.32. Edit Menu & Popup Menu: Off Line Characterization

Double-clicking the *Block* icon also activates the *Block Characterization* dialog box.

In any case, the following dialog box will open:

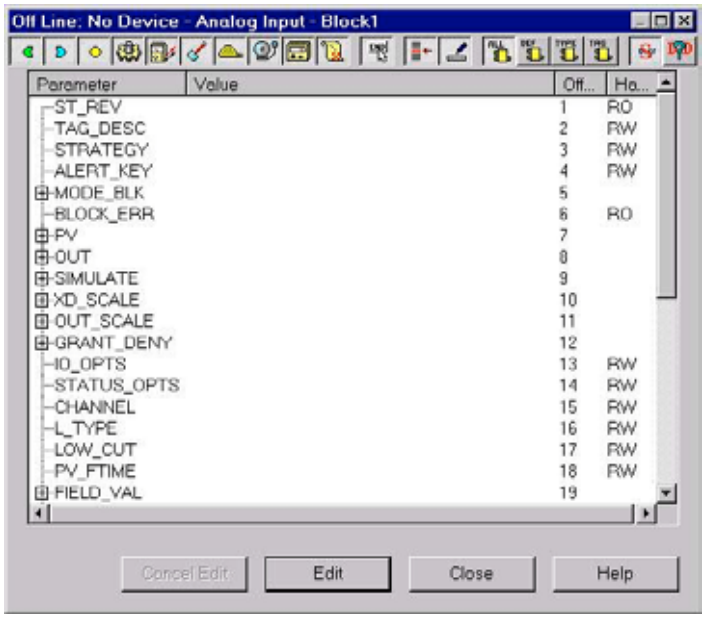


Figure 3.33. Off Line Characterization Dialog Box

Select a *Parameter* by clicking its line on the table. Click *Edit* or click the *Value* column in front of the *Parameter*.

After editing the *Value* column, click *End Edit* to confirm the changes on the *Parameter*. If the values edited into the *Parameter* are incorrect or don't have to be changed, click *Cancel Edit* and they will go back to default.

See the figure below:

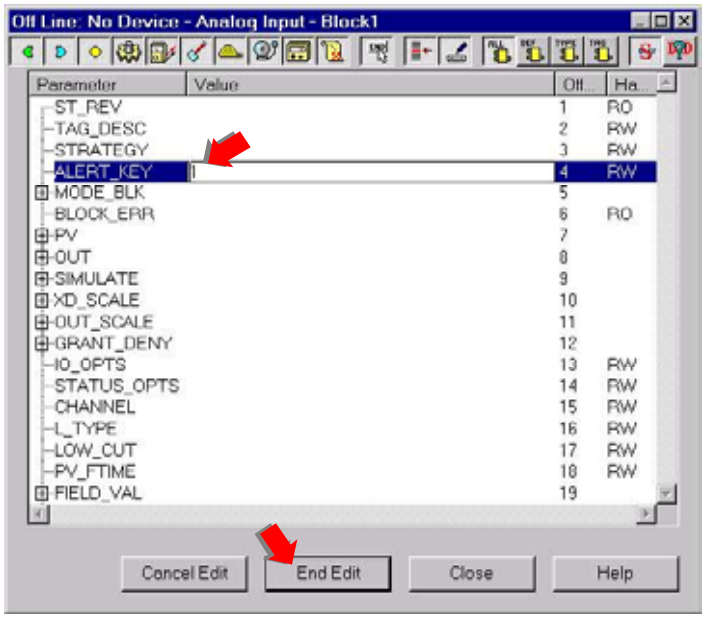


Figure 3.34. Editing Parameter Values

After finishing the edits, click *Close* to exit the *Block Characterization* dialog box and go back to the *Process Cell* window.

For further information about the *Parameters* from the *Blocks* manufactured by **SMAR**, see the **Function Blocks Instruction Manual**.

Customize Characterization

The user can customize the *Parameters* list of the *Block Characterization* dialog box.

Select the *Block* icon, at the *Process Cell* or *Fieldbus* window. Got to the *Edit* menu and click *Customize Characterization*. Or activate the popup menu by right-clicking the Block icon. Click the item *Customize Characterization*. See the following figures:

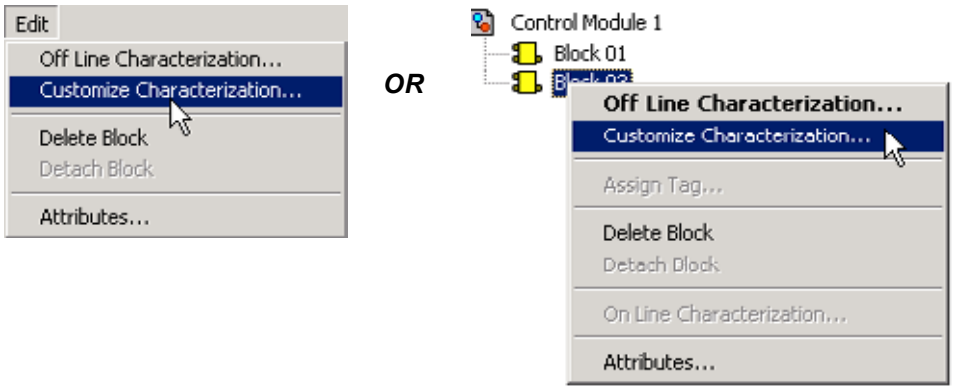


Figure 3.35. Edit Menu & Popup Menu: Customize Characterization

The *Customization* dialog box will open.

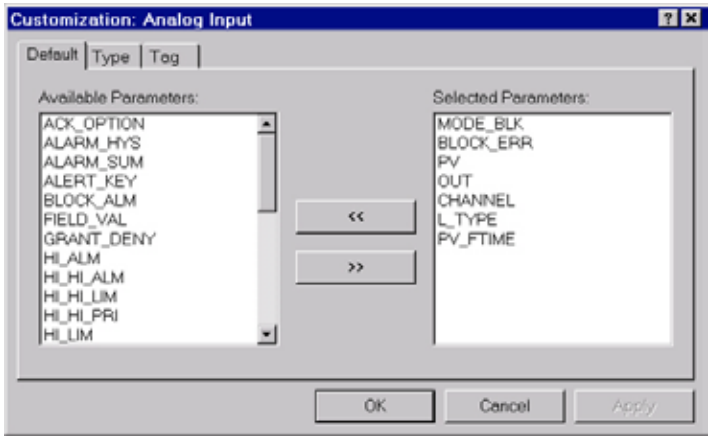


Figure 3.36. Customization Dialog Box

At the *Default* tab, select the *Parameters* that are shown for the *Block* from the same type as the one selected, when the user clicks the *Customization by Type (Default)* button, , from the *Characterization* toolbar. This customization will affect all project configurations.

At the *Type* tab, select the *Parameters* that are shown for the *Block* from the same type as the one selected, when the user clicks the *Customization by Type* button, , from the *Characterization* toolbar. This customization will affect just the current configuration.

At the *Tag* tab, select the *Parameters* that are shown just for the *Block* selected, when the user clicks the *Customization by Tag* button, , from the *Characterization* toolbar. This customization will affect just the current configuration.

Block On Line Characterization

To change the *Block Parameter* values directly in the *Devices*, the user will have to proceed with the *Init Communication* command first. (See the section *Communication* for further information)

If SYSCON is already communicating with the Plant, select the *Block* to be parameterized, go to the *Communication* menu and click *On Line Characterization*. Or activate the *Block* popup menu right-clicking its icon and selecting the item *On Line Characterization*:

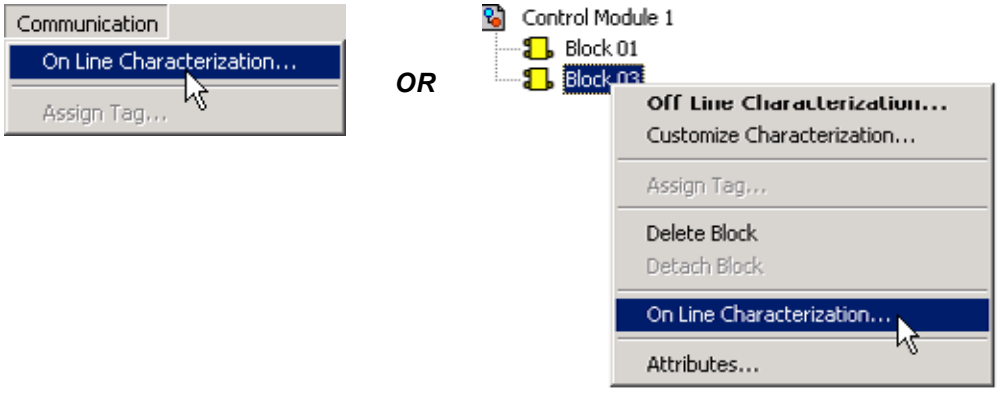


Figure 3.37. Edit Menu & Popup Menu: On Line Characterization

The *Block Characterization* dialog box will open.

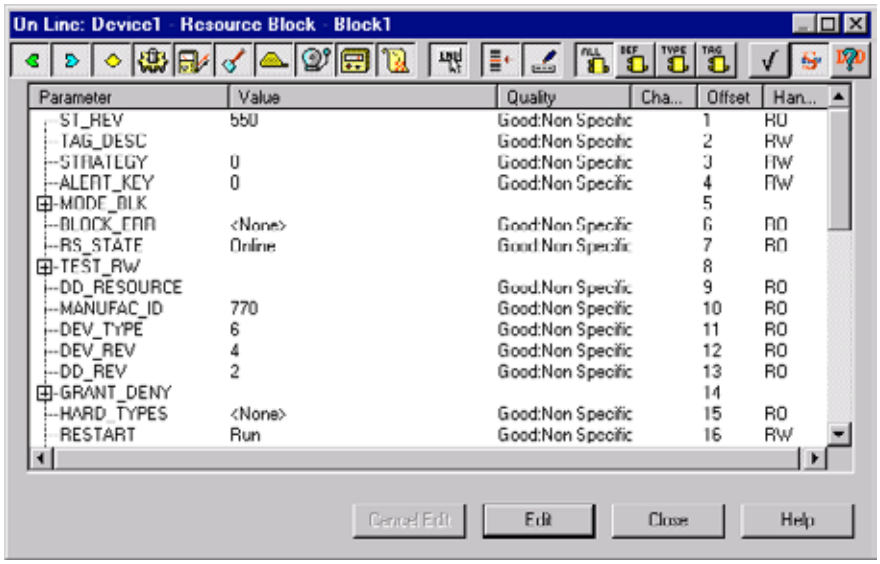


Figure 3.38. On Line Characterization Dialog Box

All of the *Parameters* will be shown in the *On Line Characterization*. Use the same procedure described for the *Off Line Characterization* to edit the *Parameters* values. If any *Parameter* is altered, it also will be altered in the corresponding *Device*.

If the user changes the value for the *Parameters*, these *Parameters* will be marked with a *V* in the *Changed* column.

To save a *Parameter* value that has not been edited, click the *Mark to save* button, , on the *Characterization* toolbar. The *Parameter* will be marked with a *V* in the *Changed* column. Or use the *Mark to save* button to unmark a *Parameter* whose value has been changed but the changes are not to be saved.

Click *Close* to exit the *Block Characterization* dialog box, and the following dialog box will open:

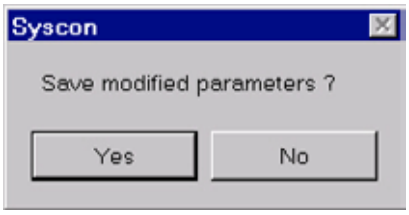


Figure 3.39. Save Parameters Dialog Box

Click *Yes* to save the changes to the Configuration file.

3.1.5 Parameters

Ordering Parameters

Only *Block Parameters* can be ordered at the *Process Cell* window.

Select one *Parameter* icon and drag it over the other *Parameter* icon. The *Parameter* selected first will be placed above the second one on the list. See the following figure:

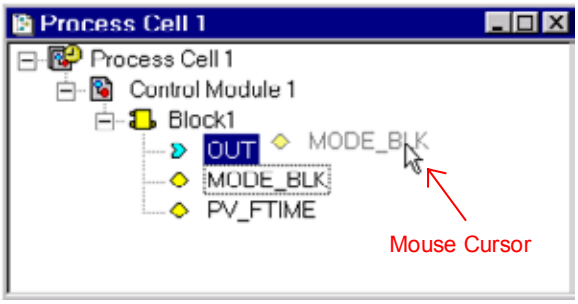


Figure 3.40. Ordering Parameters at the Process Cell Window

The *Process Cell* window will look like the following figure:

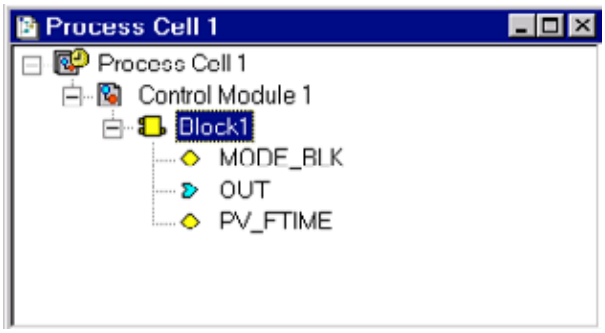


Figure 3.41. Process Cell Window

The changes made to the *Parameters* list at the *Process Cell* window will be reflected in the *Fieldbus* window.

Deleting Parameters

To remove a *Block Parameter*, select the *Parameter* icon, go to the *Edit* menu and click *Delete Parameter*. Or activate the *Parameter* popup menu, by right-clicking its icon. Click the item *Delete Parameter*. See the following figures:

Figure 3.42. Edit Menu & Popup Menu: Delete Parameter

A quick way of removing a *Parameter* is to select its icon on the *Process Cell* window and press the *Delete* key, on the keyboard.

The *Warning* dialog box will open. To confirm the deletion, click *Yes*.

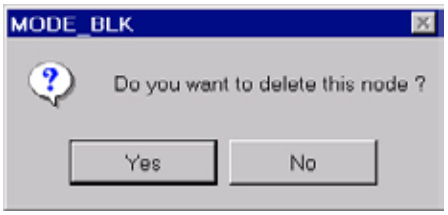


Figure 3.43. Confirm Deletion Dialog Box

3.1.6 Strategies

Creating Strategies

There will be a *Strategy* window for every *Control Module* created for a *Process Cell*.

To initialize a *Strategy* window, select the *Control Module* icon, go to the *View* menu and click *Strategy*. Or activate the *Control Module* popup menu by right-clicking its icon. Click the item *Strategy*. See the following figures:

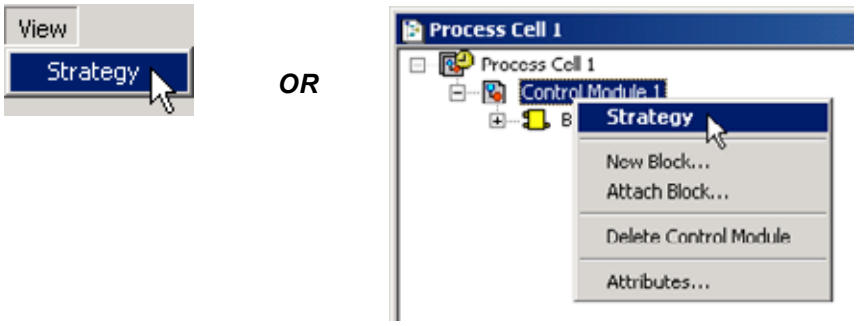


Figure 3.44. View Menu & Popup Menu: View Strategy

Double-clicking the *Control Module* icon also opens the *Strategy* window.

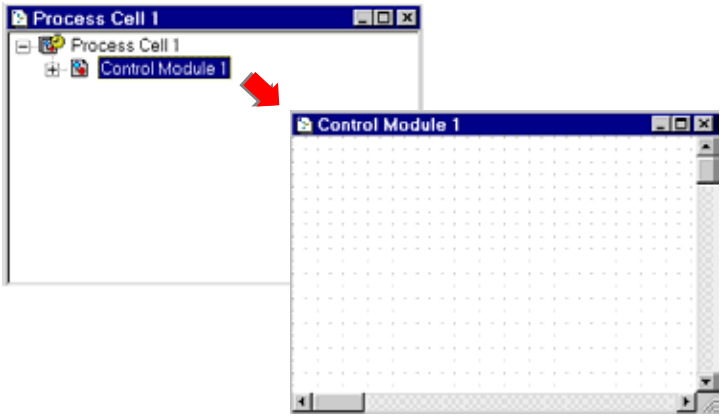


Figure 3.45. Strategy Window

Opening Existing Strategies

If changes have been made on a *Strategy* window and saved, use the steps described in the section above to open the existing *Strategy*.

Then, the *Strategy* window should look like the example below:

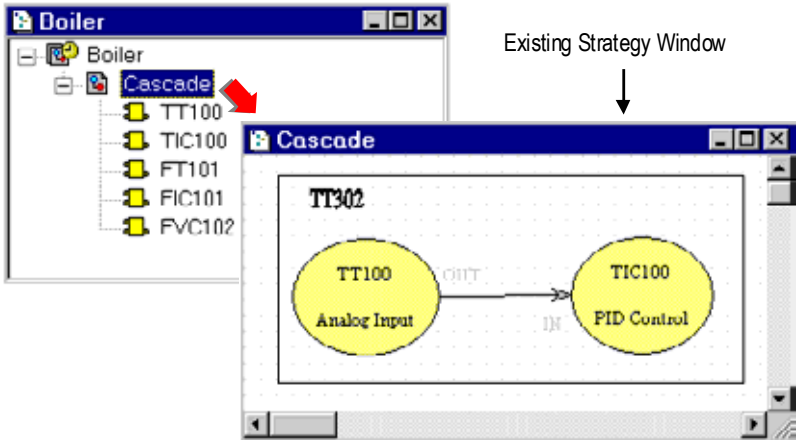


Figure 3.46. Strategy Window

Saving Strategies

A *Strategy* can be saved after modifying the drawing area, for example, adding a *Block*.

To save a *Strategy* window, go to the *Project File* menu and click *Save*, as the following figure shows:

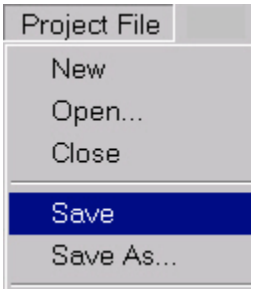


Figure 3.47. Project File Menu: Save Strategy

Or click the *Save* button, , on the *General Operation* toolbar, under the *Menu* bar.

Anytime the drawing is changed, do not forget to save it.

Closing and Exiting Strategies

As the *Strategy* window is not an independent one, there is no exiting command. To close it, go to the *Project File* menu and click *Close* (since the focus is on this window), as the figure shows:

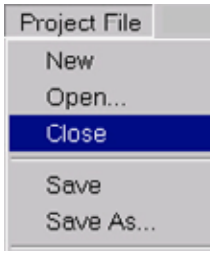


Figure 3.48. Project File Menu: Close Strategy

Or click the *Close* button, , on the upper right corner of the *Strategy* window.

Adding Blocks to the Strategy

There are three ways of adding *Blocks* to the *Strategy* window:

a) Dragging Blocks from the Process Cell Window

Once all *Blocks* have been inserted at the *Control Module*, the user can drag them to the *Strategy* window to start the linking process.

In this case, the user will work with two different windows: the *Process Cell* window and the *Strategy* window.

To organize things and make them easy to be used, the user can display the windows side by side: go to the *Window* menu, click *Tile*, and it will organize the opened windows inside the application.

If more than three windows are opened remember that some can be minimized and the user can tile just the windows being worked with.

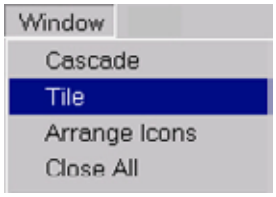


Figure 3.49. Window Menu: Tile

Now, select a *Block* icon, in the *Process Cell* window, and drag it to where it will be placed, in the *Strategy* window drawing area, using the left mouse button. Observe the following diagram:

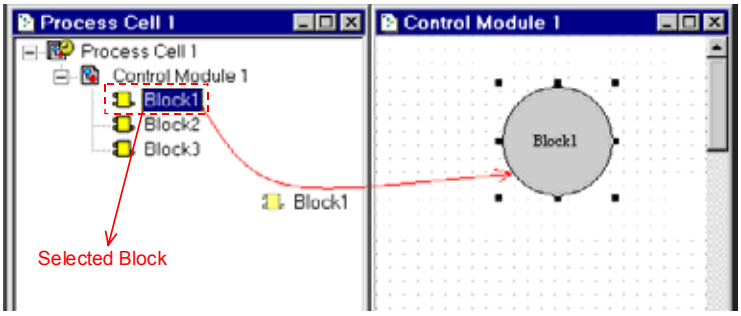


Figure 3.50. Dragging Blocks to the Strategy Window

NOTE

If the *Block* is dropped very close to one already added to the *Strategy* window, the *Block* will not be drawn. It will be necessary to move the *Blocks* in order to organize the *Project*, after they have been dropped in the *Strategy* window. Look for details in the following sections.

The figure below is an example of two dragged *Blocks* inside the *Strategy* window:

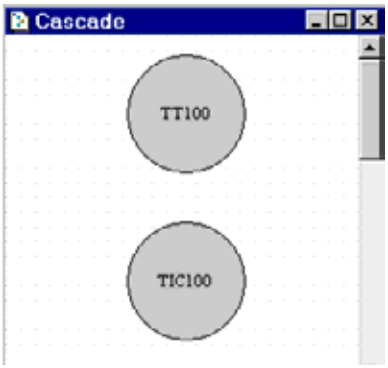


Figure 3.51. Blocks inside the Strategy Window

The user can create more than one graphical representation of the *Block* in the *Strategy* window by dragging the *Block* icon, but only one *Block* is attached to the *Control Module*.

b) Creating Blocks in the Strategy Window

In the previous case, the user already had *Blocks* in the *Control Module*. Now, a new *Block* can be created in the *Strategy* window.

First, click on the *Strategy* window and check the *Strategy* toolbar to be sure it is open. If it is not, go to the *Tools* menu and point to the item *ToolBoxes*. The option *Strategy* should be checked (➵).

Click the *Function Block* button, , on the *Strategy* toolbar.

When the cursor is placed in the *Strategy* window drawing area, it will turn into a cross. Use the cursor to click on the drawing area.

The *New Block* dialog box will open:

1. Select a *Block Manufacturer* from the list.
2. Select a *Device Type* provided by the manufacturer that has been selected.
3. Select the Device Revision.
4. Select the *DD Revision*.
5. Select the *CF Revision*.
6. Select a *Block Type*.
7. Type a related tag for the *Block*.
8. Click *OK*.

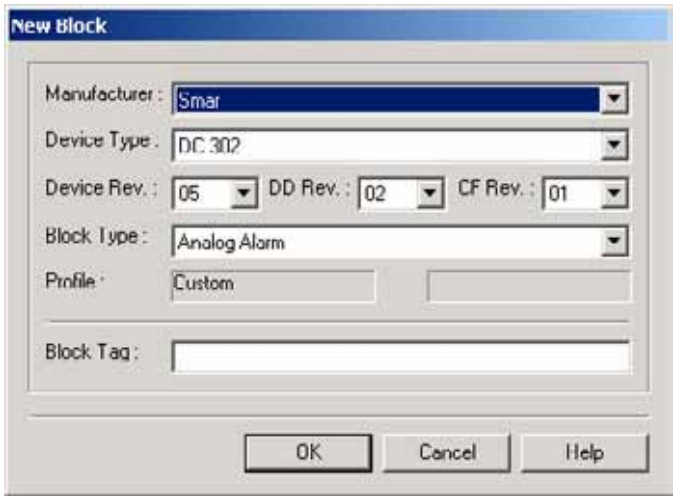


Figure 3.52. New Block Dialog Box

The new *Block* will be drawn in the *Strategy* window and attached to the corresponding *Control Module*.

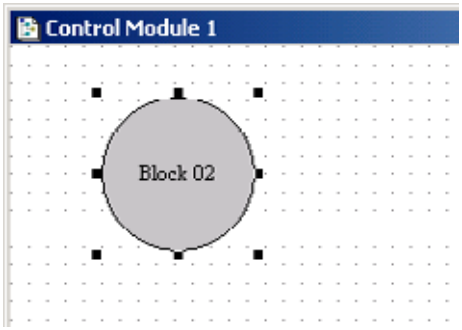


Figure 3.53. New Block in the Strategy Window

If another *Block* is to be added, from the same *Manufacturer* and *Device Type* as the previous one, right-click the drawing area. A list of *Blocks* types will open:

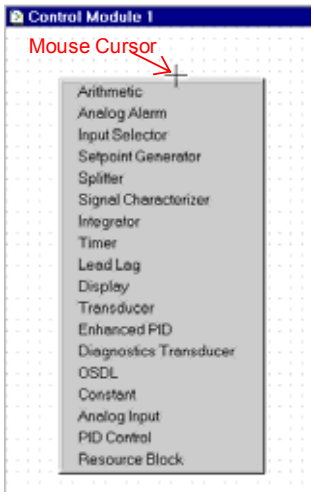


Figure 3.54. List of Block Types

c) Using a Template File

It is possible to use a ready *Strategy*, to add *Blocks* to the *Control Module*. The user will import a *Template* file to the *Strategy* window.

Open the *Strategy* window of the *Control Module* where the user will want to add the *Blocks*, and click the *Import Template* button, , on the *Strategy* toolbar.

If the *Strategy* toolbar is not open, go to the *Tools* menu, item *Strategy*, and click the option *Import Strategy Template*, as indicated in the following figure:

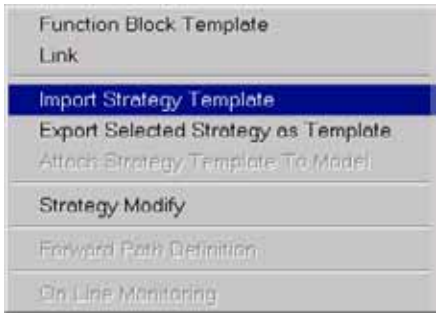


Figure 3.55. Tools Menu: Strategy Options

The *Open* dialog box will open:

1. Select the folder in the *Look in* box.
2. Click the *Template* file icon or type its name in the *File name* box.
3. Click *Open*.

Observe the following figure:

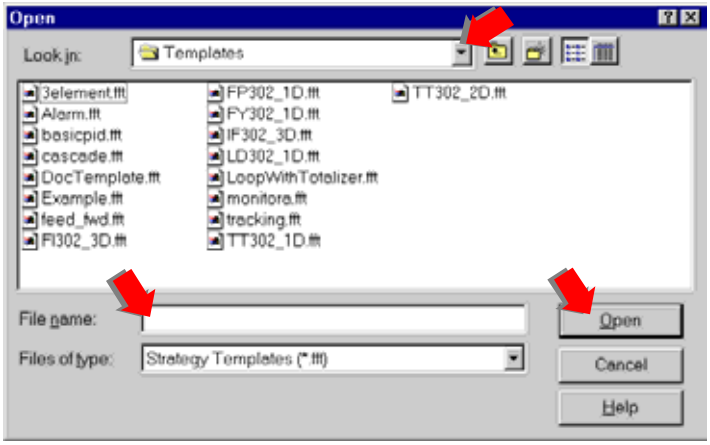


Figure 3.56. Open Strategy Dialog Box

The *Template* will be added to the *Strategy* window. The user will be asked to confirm if the *Template* is to be imported to the *Strategy*. See the example below:

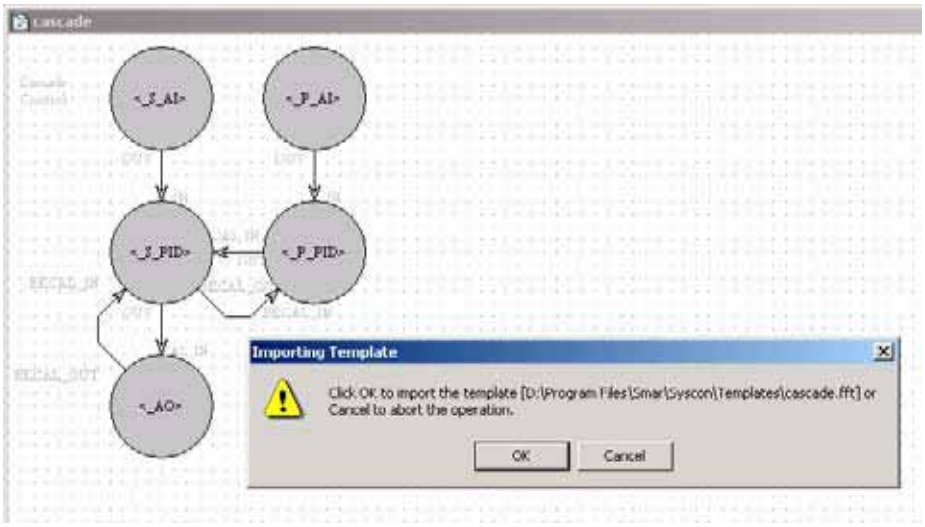


Figure 3.57. Import Strategy Template: Example

Click *Ok* to import the *Template* to the *Strategy* window. The *Blocks*, *Links* and *Parameters* will be attached to the corresponding *Control Module*.

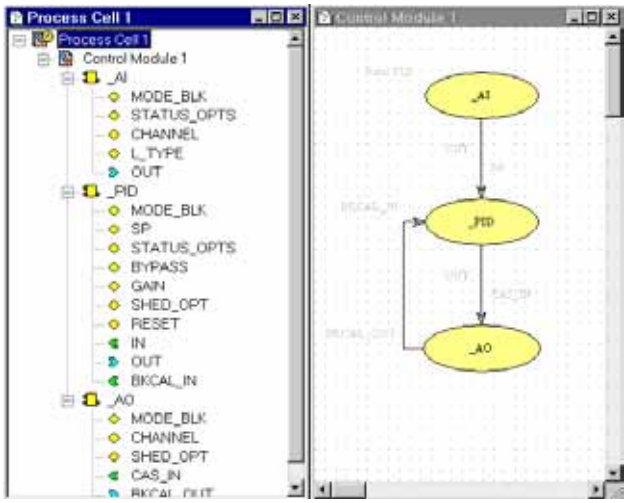


Figure 3.58. Example of a Strategy Attached to the Control Module

Click *Cancel* to abort the operation. The Template will not be imported to the Strategy.

NOTE

In SYSCON 5.22, a *Block* created or imported from a template file in the *Strategy* window is automatically attached to the corresponding *Control Module*.

If the user is opening a configuration file from a previous version of SYSCON and this file contains *Block* templates in the *Strategy*, these *Blocks* will appear in the *Strategy* window but will not be attached to the *Control Module*. Right-click the *Block* in the *Strategy* window and select the option *Attach to Model*.

Removing Blocks from the Strategy

Be very careful when removing a *Block* from the *Strategy* window! The user can remove the *Block* only from the *Strategy* window, or the *Block* from the project.

Click the *Select* button, , on the *Strategy* toolbar, and select the *Block* to be removed, in the *Strategy* window. More than one *Block* can be selected.

Right-click the *Block* and select *Delete* from the menu:

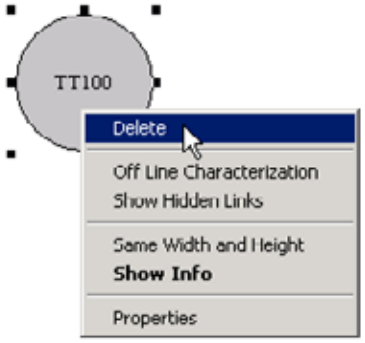


Figure 3.59. Deleting a Block

Or press the *Delete* key, on the keyboard.

The *Function Block Deletion* dialog box will open. If more than one *Block* is selected, a dialog box will open to confirm the deletion of each *Block*. Observe the following figure:

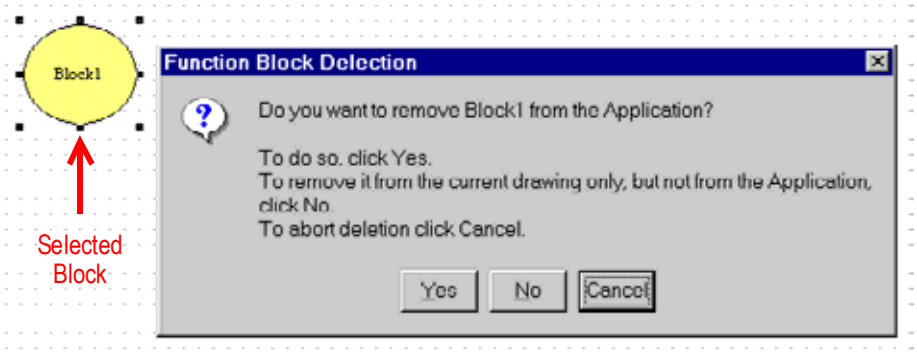

Block1
Selected Block
Function Block Delection
Do you want to remove Block1 from the Application?
To do so, click Yes.
To remove it from the current drawing only, but not from the Application, click No.
To abort deletion click Cancel.
Yes
No
Cancel

Figure 3.60. Function Block Deletion

Click *Yes* to remove the *Block* from the *Project*. **Attention**: clicking this button will remove the *Block* from the *Strategy* window, from the *Control Module* and from the *Device*. Therefore, the user will lose the *Block Parameters* and *Links*. The *Block* will no longer exist in the project.

In case the user wants to remove the *Block* only from the *Strategy* window, click *No*. Later, the user can drag the *Block* again and restore *Links*. (See the section *Restoring Links*)

If the *Block* is not to be deleted, click *Cancel*.

Selecting Objects at the Strategy Window

a) Selecting One Object

To select only one object in the *Strategy* window, click the *Select* button, , on the *Strategy* toolbar, then click on the object.

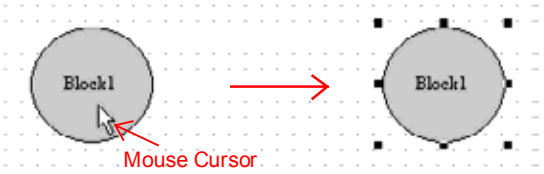


Figure 3.61. Selecting One Object

b) Selecting a Group of Objects

To select two or more objects in the *Strategy* window, there are two options:

- Click the *Select* button, , on the *Strategy* toolbar and click on one object. Press and hold the *Shift* key, on the keyboard, then click each object to be selected.
- Or click anywhere in the blank area of the *Strategy* window. While dragging the mouse, a rubber band appears around the objects selected.

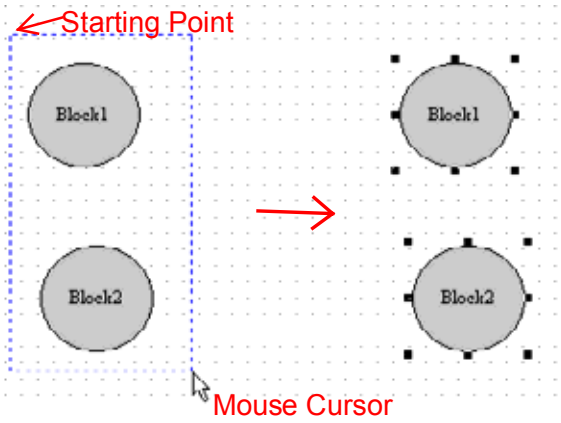


Figure 3.62. Selecting a Group of Objects

c) Selecting All Objects

To select all objects drawn in the *Strategy* window, go to the *Edit* menu and click *Select All*. Or use *Ctrl+A*, on the keyboard, to select the entire drawing area.

Changing Blocks Appearances

Changing the Block Tag

It is possible to change the *Block* tag in the *Strategy* window. The new tag will automatically be changed in the *Process Cell* window.

Follow these steps to change the *Block* tag:

1. Click the *Strategy Modify* button, , on the *Strategy* toolbar.
2. The mouse cursor will turn into a cross. Click on the *Block* label.
3. Type a new tag for the *Block*.
4. Click the drawing area to finish this procedure.

See the following diagram:

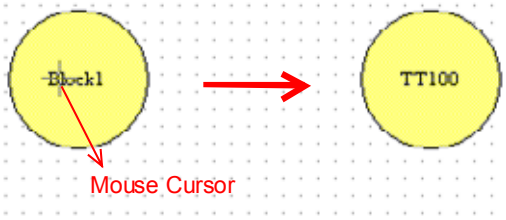


Figure 3.63. Changing Block Tag

Changing Block Dimension Attributes

It is possible to make a *Block* have its height equal to its width:

1. Click the *Select* button, on the *Strategy* toolbar.
2. Select the *Block*.
3. Right-click on it and the popup menu will open.
4. Click the option *Same Width and Height*.

See the following figure:

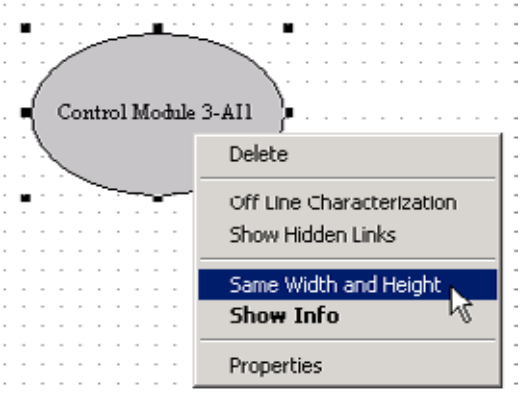


Figure 3.64. Block Popup Menu: Same Width and Height

The *Block* will be changed as this diagram shows:

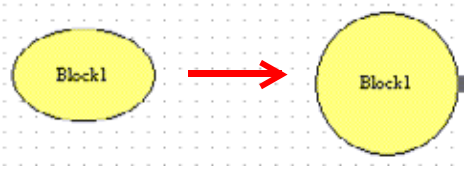


Figure 3.65. Changing Block Dimension

Showing Block Types

When a *Block* is added to the *Strategy* window, the object only shows the *Block* tag.

The *Block* type will appear:

1. Select the *Block* in the *Strategy* window.
2. Right-click on it.
3. Click on the option *Show Info*.

See the following diagram:

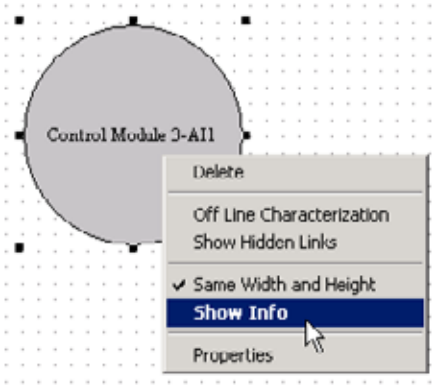


Figure 3.66. Block Popup Menu: Show Info

When completed, the *Block* will appear as the following:

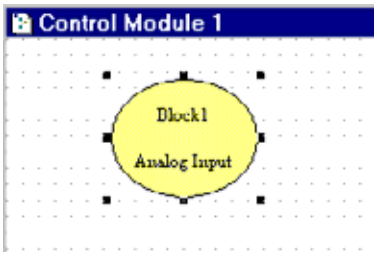


Figure 3.67. Showing Block Type

Changing Block Properties

Right-click any *Block*. The popup menu will open. Click the option *Properties*, as indicated below:

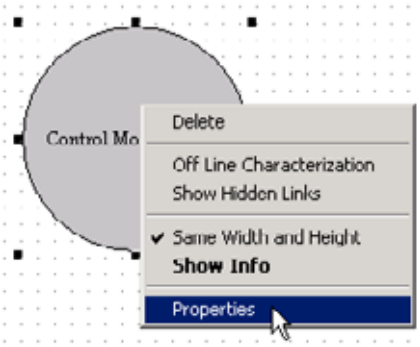


Figure 3.68. Block Popup Menu: Properties

The following dialog box will open:

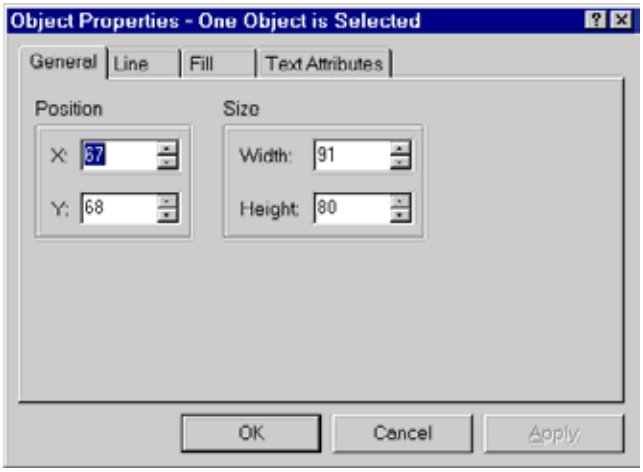


Figure 3.69. Object Properties Dialog Box

In each tab, the user can change different properties. For example, the line color can be changed at the *Line* tab, item *Color*, and the fill color can be changed at the *Fill* tab, item *Color*:

Figure 3.70. Changing Block Properties

Changing the Block Default Format

When a *Block* is added to the *Strategy* window, an ellipse (more exactly a circle) containing the *Block* tag will represent it.

To change this representation, go to the *Option* menu and point to the item *Function Block Icon*. Select a new format, as indicated in the figure below:

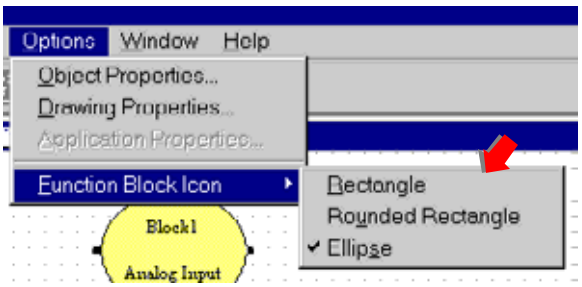


Figure 3.71. Options Menu: Function Block Icon

The next figure shows the different *Block* formats:

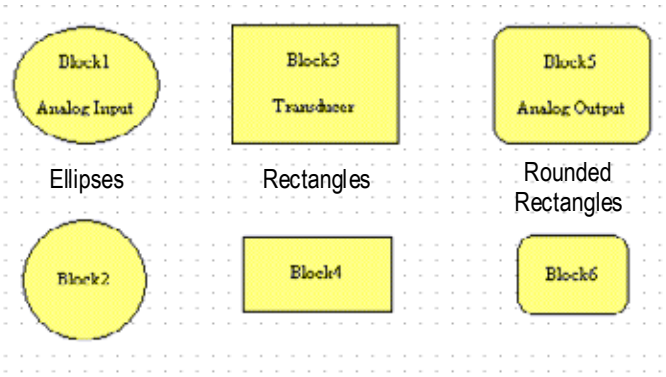


Figure 3.72. Block Formats

3.1.7 Links

Creating Links

Blocks can only be linked inside the *Strategy* window.

To link one *Block* to another, click the *Link* button, , on the *Strategy* toolbar, and click on the *Block*.

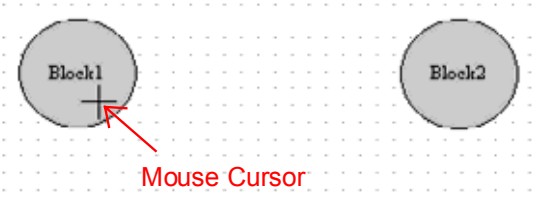


Figure 3.73. Linking Blocks - Output Parameter

The *Output Parameter Selection* dialog box will open:

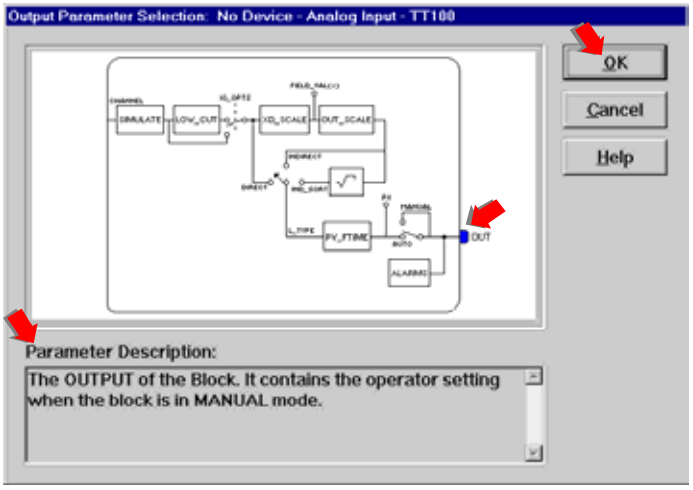

Output Parameter Selection: No Device - Analog Input - TT100
OK
Cancel
Help
Parameter Description:
The OUTPUT of the Block. It contains the operator setting when the block is in MANUAL mode.

Figure 3.74. Output Parameter Selection Dialog Box

When the cursor is placed over the *OUT Parameter*, a short explanation can be read, at the *Parameter Description* text box. Click on the *OUT Parameter* to select it then click *OK*.

Return to the *Strategy* window, and the cursor will draw a line to represent the *Link*. Place the mouse over the target *Block* and click on it.

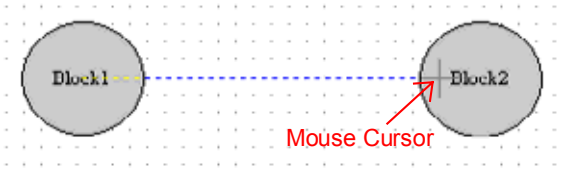


Figure 3.75. Linking Blocks - Input Parameter

The *Input Parameter Selection* dialog box will open:

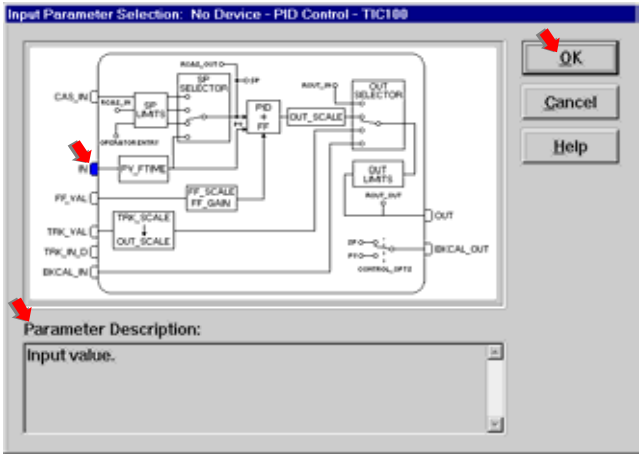


Figure 3.76. Input Parameter Selection Dialog Box

When the cursor is placed on an *Input Parameter*, the user will read a short explanation about it, at the *Parameter Description* text box. Select the *Input Parameter* by clicking on it then click *OK*.

The *Link* will automatically be drawn:

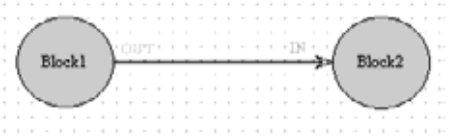


Figure 3.77. Linked Blocks

Fast Link Process

It is possible to make *Links* without opening the *Selection* dialog box.

With the *Link* button selected, , on the *Strategy* toolbar, right-click on the *Block*. The *Parameters List* will open. Click the item *OUT* that represents the *OUT Parameter*:

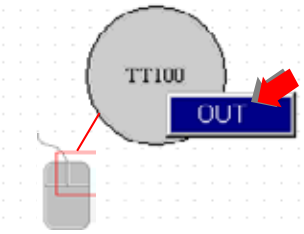


Figure 3.78. Fast Link - Output Parameter

Drag the cursor to the target *Block* and right-click on it. The popup menu will open. Select the *Input Parameter* wanted by clicking the corresponding item. See the following diagram:

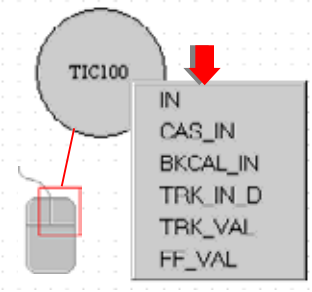


Figure 3.79. Fast Link - Input Parameter

See the following example of linked *Blocks* into a Cascade control design:

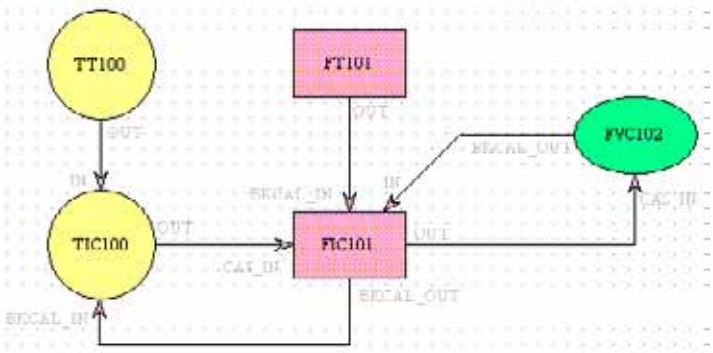


Figure 3.80. Cascade Control Example

Link Attributes

A *Link* has several attributes, and can be changed. Use the *Select* Button, , on the *Strategy* toolbar, to select a *Link*. Right-click on the *Link* to activate its popup menu.

On the *Labels* submenu, there are three options:

- *Show Link Label*: shows the *Link* label if the option has been checked.
- *Show Output Parameter*: shows the *Link Output Parameter* label if the option has been checked.
- *Show Input Parameter*: shows the *Link Input Parameter* label if the option has been checked.

The following figure indicates the *Labels* submenu options:

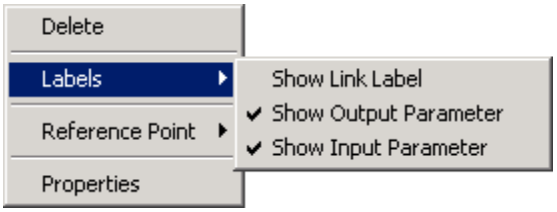


Figure 3.81. Labels Menu

On the *Reference Point* submenu, select the reference point for the *Modifying* tool. There are three options:

- *Ref. On Current Point*: the selected handle is the reference itself.
- *Ref. On Previous Point*: the selected handle will be placed based on the position of the previous handle.
- *Ref. On Next Point*: the selected handle will be placed based on the position of the next handle.

The following figure indicates the *Reference Point* submenu options:

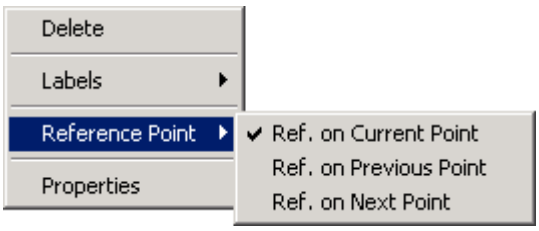


Figure 3.82. Reference Point Menu

When clicking the item *Properties*, the *Object Properties* dialog box will open. The user can change the line and fill colors, for example.

Removing Links

To remove a *Link* from the *Strategy* window, select the *Link* using the *Select* button, , on the *Strategy* toolbar. Right-click the *Link* and select the option *Delete*.

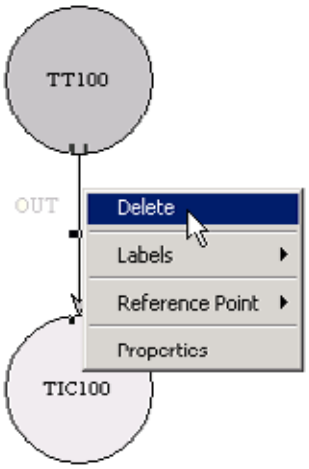


Figure 3.83. Link Menu: Delete

Or press the *Delete* key, on the keyboard. The *Link Deletion* dialog box will open:

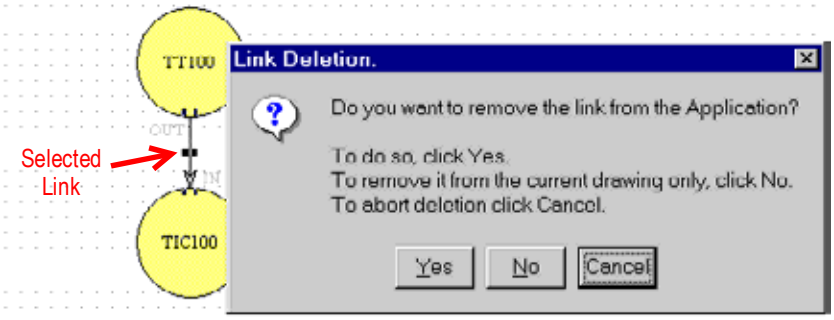


Figure 3.84. Link Deletion Dialog Box

Be careful! Clicking *Yes* will remove the *Link* and *Parameters* from the drawing area and also from the project. The *Link* will no longer exist in the *Control Module* or in the *Device*.

Click *No* to remove the *Link* only from the drawing area. In this case, it can be restored later if necessary. (Section *Restoring Links*)

If it is not to be removed, click *Cancel*.

Restoring Links

Consider the following *Strategy*:

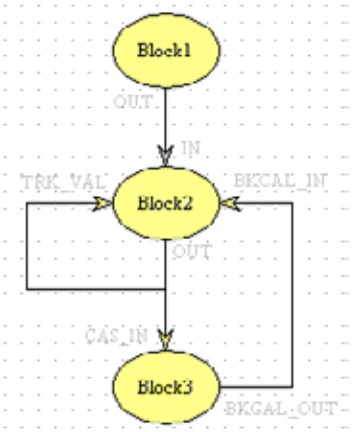


Figure 3.85. Example of Control Strategy

As can be seen, this *Strategy* has two *Feedback Links*: one from the *Block3* to the *Block2* and the second *Link* from the *Block2* to itself.

Suppose they were deleted from the *Strategy* window only.

To restore those *Links*, follow these steps:

1. Select the *Block* that had its *Link* deleted.
2. Activate the *Block* popup menu, by right-clicking on it.
3. Click the item *Show Hidden Links*.

See the following diagram:

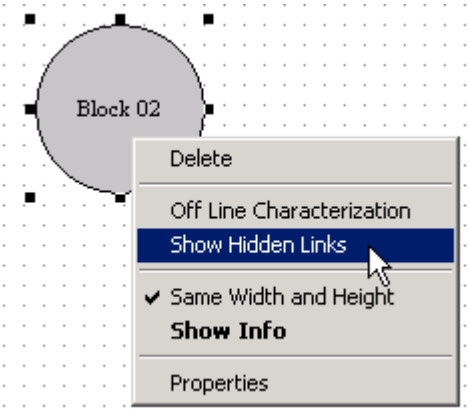


Figure 3.86. Block Popup Menu: Show Hidden Links

After being restored, the *Links* will not be shown in their previous positions.

They will look like the *Links* in the following figure:

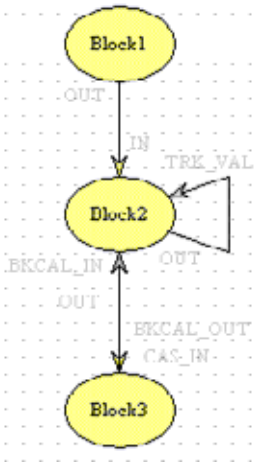


Figure 3.87. Restored Links

See the section *Redrawing Links* to understand how the *Links* can be redrawn as they were before.

Redrawing Links

A *Link* line can be redrawn by dragging the modifying handles in the drawing area, creating a new handle or removing a handle.

To create a new modifying handle, click on the *Link* line. To remove a modifying handle, right-click on the handle.

Consider the following *Strategy*:

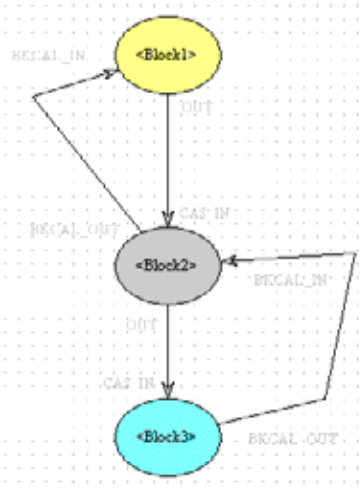


Figure 3.88. Another Example of Control Strategy

To redraw the link from *Block2* to *Block1*, as in the example above, follow these steps:

1. Use the *Select* Button, , on the *Strategy* toolbar, to select the *Link* line.
2. Click the *Modify* button, , on the *Strategy* toolbar, and the modifying handles will appear.
3. Click on the *Link* line to create a new modifying handle. See the diagram:

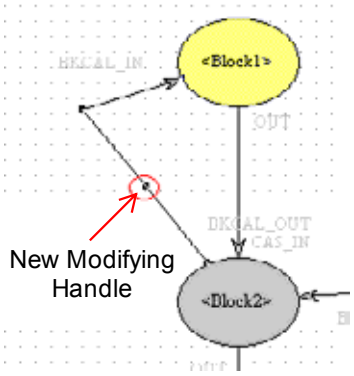


Figure 3.89. Modify Handle Tool

4. Click on a handle and drag it over the drawing area to redraw the *Link*.

According to the reference point, hold the *Ctrl* key down while dragging the handle to draw a horizontal or vertical line from the reference handle. Or hold the *Shift* key down while dragging the handle to draw diagonal line from the reference handle.

See in the following figure the new *Link*:

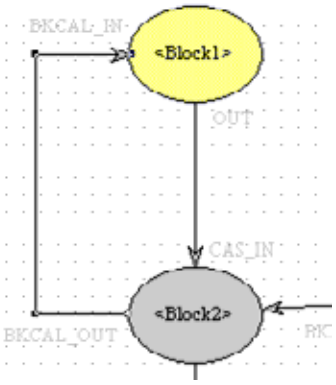


Figure 3.90. Redrawn Links

3.1.8 Templates

It is possible to use a ready *Strategy* or part of it, in another project file or even in another *Process Cell*. It is necessary to create a *Template* file from a *Strategy Configuration*. After which, just import the *Template* into the *Control Module*, change the tags and assign the *Blocks* to the *Devices*.

Using templates can speed up the *Strategy* development work tremendously. This will make it very productive at the same time as the boring repetitive work is eliminated. Engineering time and costs are reduced.

At the same time the configurations become more consistent and neater looking, and therefore easier to troubleshoot. Pre-configured templates also eliminate many chances of mistakes. The tedious process of instantiating *Block* after *Block*, and the agony of that forgotten *Parameter* is a thing of the past.

Creating Templates

To create a *Strategy Template* file, go to the *Project File* menu and click *New*, as the following figure shows:

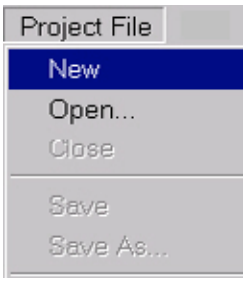


Figure 3.91. Project File Menu: New

Or click the *New* button, , on the *General Operation* toolbar, under the *Menu* bar.

The *Document Type* box will open. Click the option *Templates*, as indicated below:

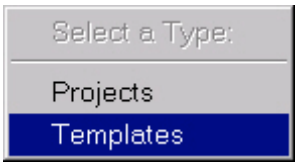


Figure 3.92. Select the File Type

The *Strategy Template* window will open:

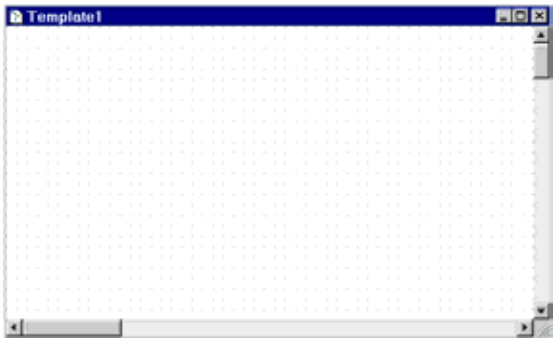


Figure 3.93. Strategy Template Window

It looks exactly like the *Strategy* window. SYSCON will automatically name it *Template 1*.

Saving Templates

First, it is necessary to understand that the user cannot save a *Template* without drawing an object.

To save the *Template*, go to the *Project File* menu and click *Save*, as the following figure shows:

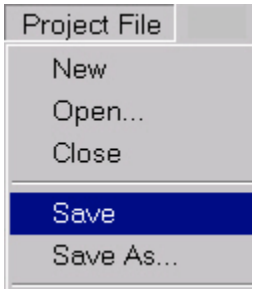


Figure 3.94. Project File Menu: Save

Or click the *Save* button, , on the *General Operations* toolbar, under the *Menu* bar.

The *Save As* dialog box will open:

1. Choose the folder where the *Template* will be saved. There is a folder named *Templates*, inside the *Syscon* folder. We suggest that all *Template* files saved should be in this folder. Double-click the *Templates* folder to open it.

2. Type the name for the *Template* in the *File name* box.
3. Click *Save*.

See the following figure:

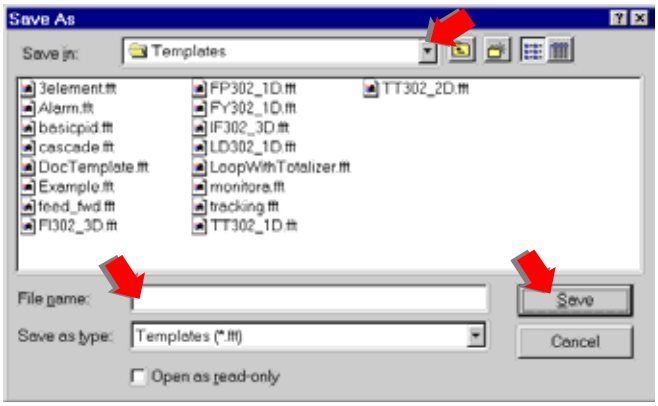


Figure 3.95. Save As Dialog Box

Anytime a change is made to the *Template* drawing, do not forget to save it.

Opening Template Files

To open an existing *Template*, go to the *File* menu and click *Open*, as in the following figure:

Figure 3.96. Project File Menu: Open

Or click the *Open* button, , on the *General Operations* toolbar, under the *Menu* bar.

The *Open* dialog box will open:

1. In the *Look in* box, select the folder that contains the *Template* file to be opened.
2. In the *Files of type* box, select the *Templates (.FFT)* type.
3. Click the *Template* file icon or type its name in the *File name* box.
4. Click *Open* to conclude this task.

See the following figure:

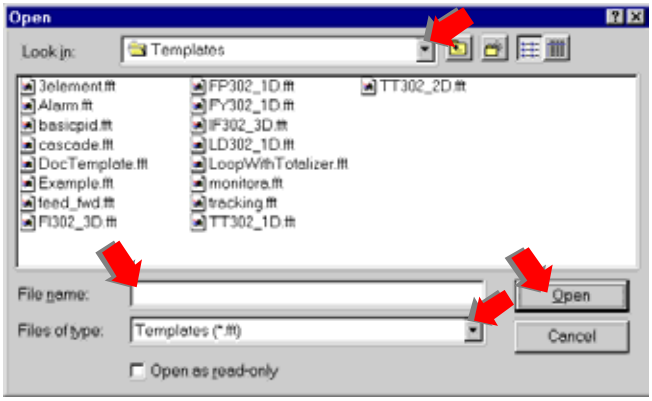


Figure 3.97. Open Template Dialog Box

Closing Template Files

To close the *Template*, click on its window, in case the focus is on another application window, go to the *Project File* menu and click *Close*, as in the following figure:

Figure 3.98. Project File Menu: Close

A quick way of closing a *Template* is to click on the Close button, , in the upper right corner of the *Template* window.

Do not forget to save the *Template* before closing.

Editing Templates

The *Template* window has the same properties as in the *Strategy* window. The user can draw *Blocks* and *Links*, and can also configure *Blocks Attributes*. The only difference is that the *Blocks* will not be attached to a *Control Module* or a *Device*.

Creating Blocks

To start the editing process, add the *Blocks* to the drawing area, using the *Function Block Template* button, , on the *Strategy* toolbar. Follow the steps described in the section *Creating new Blocks in the Strategy window*. The only difference is that it will not attach the *Blocks* to a *Control Module*.

Changing Block Attributes

The user can change *Block* tags, typing names related to the *Block* type or function. Use the *Strategy Modify* button, , on the *Strategy* toolbar. Follow the steps described in the section *Changing the Block Tag*.

Creating Links

Then, use the *Fast Link* process to link the *Blocks*. The user can also change the *Link* label. (See the section *Using Links*)

Block Characterization

Double-click on a *Block* to open the *Off-line Characterization* dialog box. The user will be able to edit the *Parameters*. (See the section *Block Off Line Characterization*)

Importing Templates into a Strategy Window

The user can only import *Templates* in the *Strategy* window. Double-click the *Control Module* icon to open the *Strategy* window.

To import a *Template*, click the *Import Template* button, , on the *Strategy* toolbar. The *Open* dialog box will open:

1. In the *Look in* box, select the folder that contains the *Template* file desired.
2. Click the *Template* file icon or type its name in the *File name* box.
3. Click *Open* to conclude this task.

See the following figure:

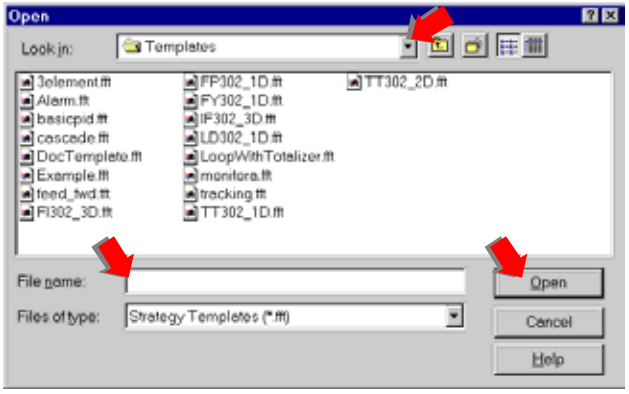


Figure 3.99. Open Template Dialog Box

The *Template* drawing will be added to the *Strategy* window. The user will be asked to confirm if the *Template* is to be imported to the *Strategy*. See the example below:

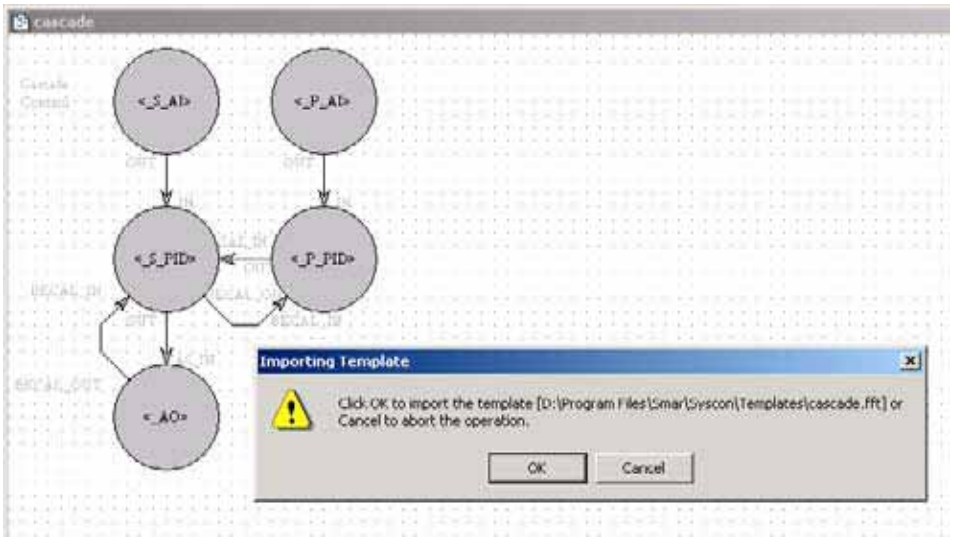


Figure 3.100. Importing Template File

Click *Ok* to import the *Template* to the *Strategy* window. The *Blocks*, *Links* and *Parameters* will be attached to the corresponding *Control Module*.

Exporting Templates from the Strategy Window

Select a ready *Strategy*, or part of it, and save it as a *Template* file.

In order to do this, select the *Blocks* and the *Links* that will be part of the *Template*. Observe the following diagram:

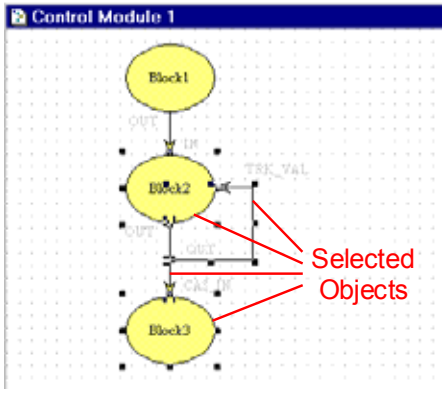


Figure 3.101. Selecting Blocks and Links

Click the *Export Template* button, , on the *Strategy* toolbar. The *Save As* dialog box will open:

1. Choose the folder where the *Template* will be saved. We suggest that the *Template* file be saved in the folder *Template*.
2. Type the name for the *Template* in the *File Name* box.
3. Click *Save*.

See the following figure:

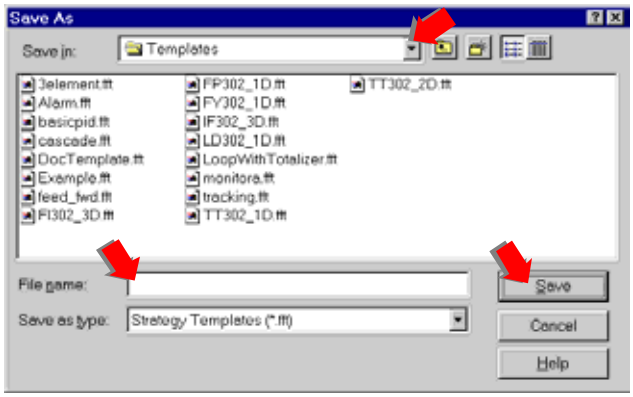


Figure 3.102. Save As Dialog Box

The *Strategy* selected will be saved in a file and it can be used at another time in another project configuration.

3.2 The Physical Project

3.2.1 Fieldbus Networks

Creating Fieldbuses

To create a *Fieldbus*, select the *Fieldbus Networks* icon, go to the *Edit* menu and click *New Fieldbus*. It is also possible to activate the *Fieldbus Networks* popup menu right-clicking its icon. Click the item *New Fieldbus*. See the following figures:

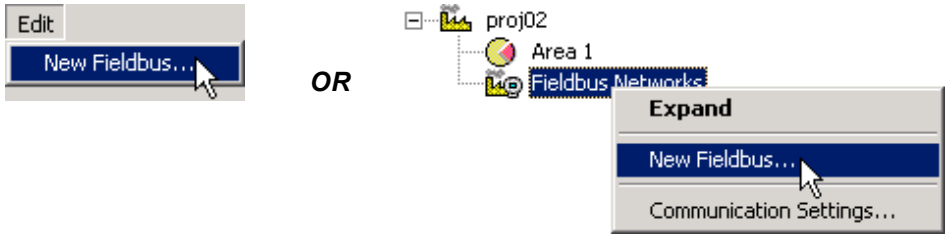


Figure 3.1. Edit Menu & Popup Menu: New Fieldbus

The *New Fieldbus* dialog box will open. Select the communication port for the *Fieldbus* and type the tag in the *Tag* text box, and then click *OK*.

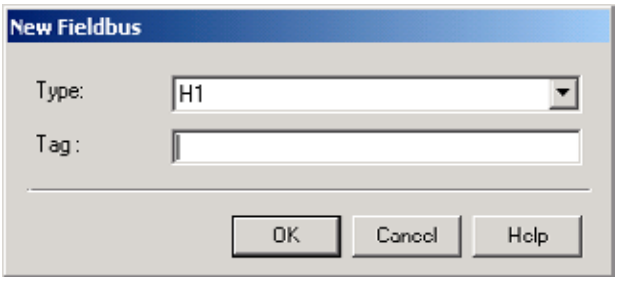


Figure 3.2. Fieldbus Dialog Box

NOTE
If the user does not type a *Tag*, the default one will be *Fieldbus n*, where *n* is a sequential number for the *Fieldbuses*. The *Fieldbus Network* doesn't have a direct correspondence to one of the existing *Process Cells*.

When the user is finished creating the *Fieldbus*, the *Project* window should look like the following figure:

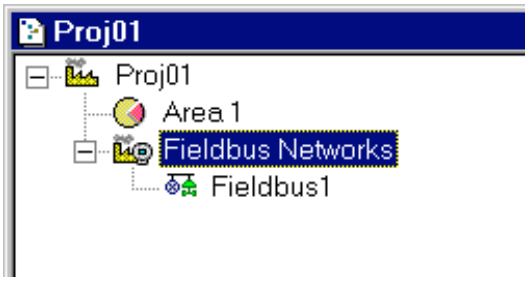


Figure 3.3. Project Window

The *Fieldbus* has its own window: click the *Fieldbus* icon, go to the *View* menu and click *Expand* to activate this window. Or activate the *Fieldbus* popup menu, right-clicking its icon. Click the item *Expand*, as seen in the following figures:

Figure 3.4. View Menu & Popup Menu: Expand Fieldbus Window

The *Fieldbus* window will open:

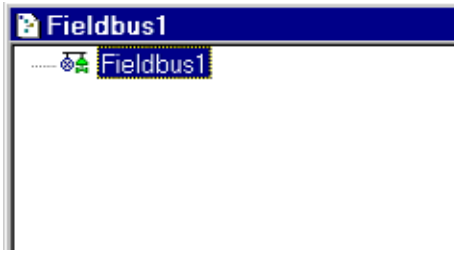


Figure 3.5. Fieldbus Window

Another easy way to open the *Fieldbus* window is to double-click the *Fieldbus* icon on the *Project* window.

Changing Fieldbus Attributes

To change the *Fieldbus* attributes, select the *Fieldbus* icon on the *Fieldbus* window, go to the *Edit* menu and click *Attributes*. Or activate the *Fieldbus* popup menu, right-clicking its icon on the *Fieldbus* window. Click the item Attributes. See the following figures:

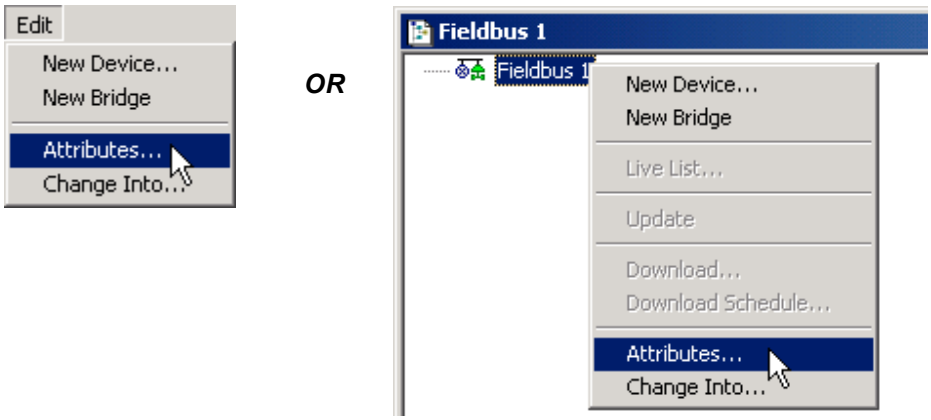


Figure 3.6. Edit Menu & Popup Menu: Fieldbus Attributes

The *Fieldbus* dialog box will open.

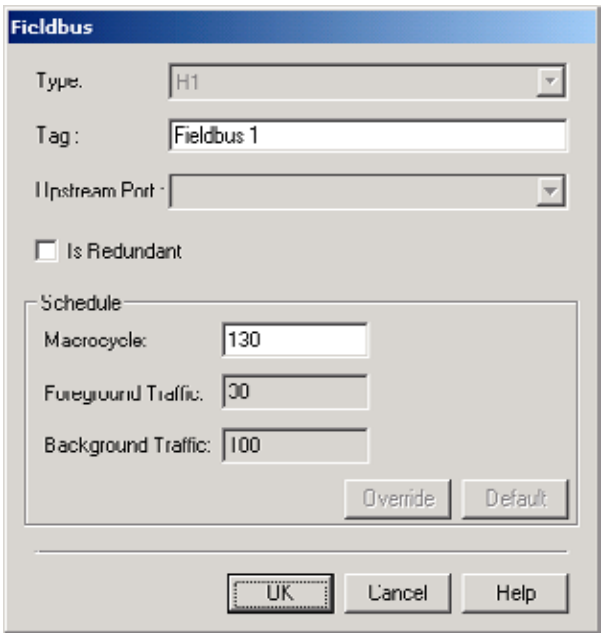


Figure 3.7. Fieldbus Dialog Box

Type the new *Fieldbus* tag.

The user is now able to determine the time dedicated to the *Background Traffic*. The *Background Traffic* (in **ms)** will affect the refreshing time of the variables under supervision. The minimum value is 100 ms. The macrocycle is automatically updated.

To set the macrocycle:

1. Type the new value for the macrocycle.
2. Click *Override*.

The values for the *Background Traffic* and the *Foreground Traffic* are calculated.

Click *Ok* to accept these values and conclude this task.

In case the user wants to restore the macrocycle to the default value, click *Default* and then click *Ok*, as the following figure shows:

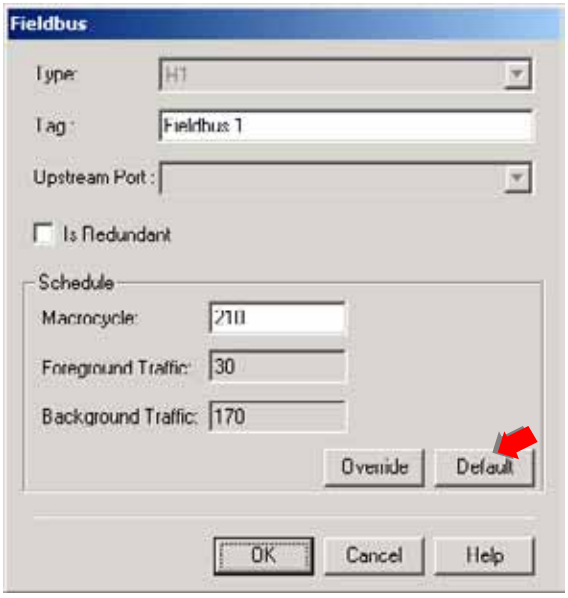


Figure 3.8. Fieldbus Macrocycle Default Value

After clicking *Override* or *Default* (before closing the *Fieldbus* dialog) the previous value of the macrocycle can be restored by clicking *Cancel*.

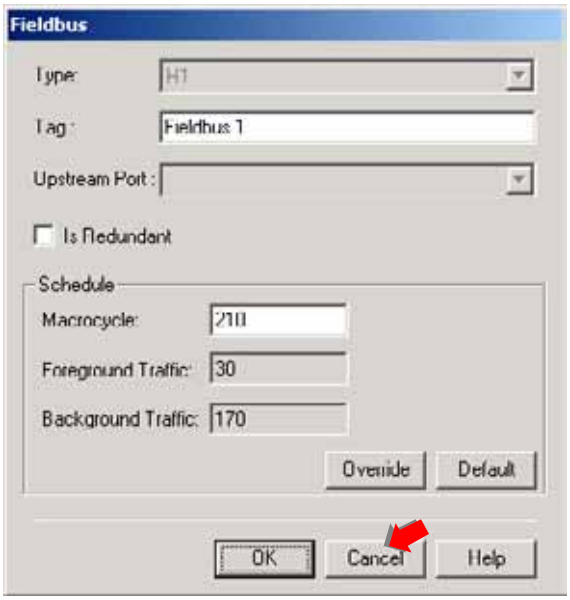


Figure 3.9. Cancel Button

NOTE
Click the button *Cancel* to quit the dialog box without applying the changes to the *Fieldbus*. All modifications will be discarded, and all *Fieldbus* parameters will be restored to the initial state.

Changing Information

To change the *Fieldbus*, select its icon on the *Fieldbus* window, go to the *Edit* menu and click *Change Info*. Or activate the *Fieldbus* popup menu, right-clicking its icon and selecting the option *Change Info*. See the following figures:

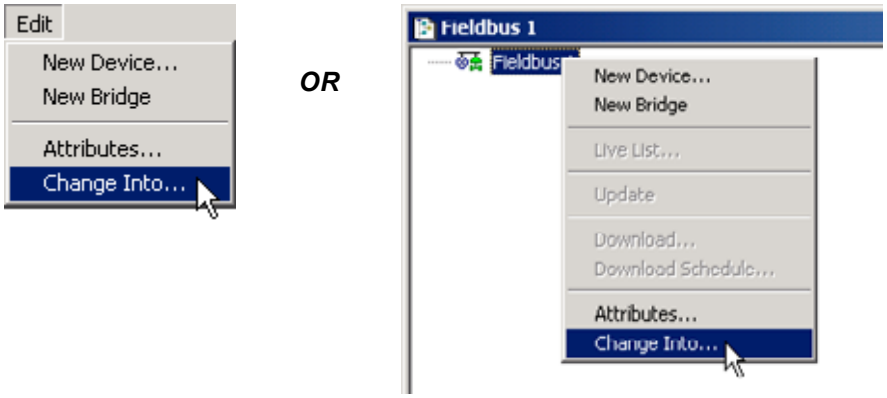


Figure 3.10. Edit Menu & Popup Menu: Change Info

The *Change Info* dialog box will open. Select the communication port for the *Fieldbus* and type the tag in the *Tag* text box, and then click *OK*.

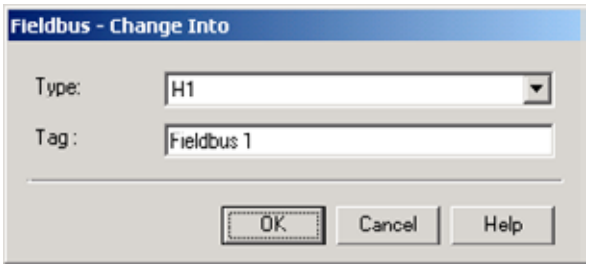


Figure 3.11. Change Info Dialog Box

Deleting Fieldbuses

To remove a *Fieldbus*, select its icon on the *Project* window, go to the *Edit* menu and click *Delete Fieldbus*. Or activate the *Fieldbus* popup menu right-clicking its icon. Click the item *Delete Fieldbus*. See the following figures:

Figure 3.12. Edit Menu & Popup Menu: Delete Fieldbus

A quick way of removing a *Fieldbus* is to select its icon on the *Project* window and press the *Delete* key, on the keyboard.

The *Warning* dialog box will appear. To confirm the deletion, click *Yes*.

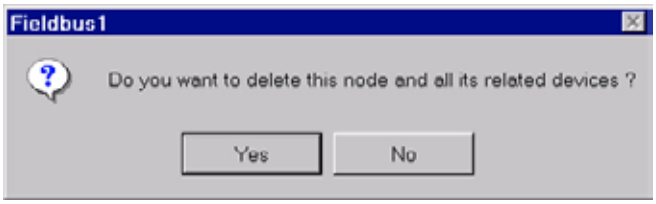


Figure 3.13. Confirm Deletion Dialog Box

3.2.2 Devices

Creating Devices

To create a *Device*, open the *Fieldbus* window and select the *Fieldbus* icon. Go to the *Edit* menu and click *New Device*. Or activate the *Fieldbus* popup menu, right-clicking its icon in the *Fieldbus* window. Click the item *New Device*. See the following figures:

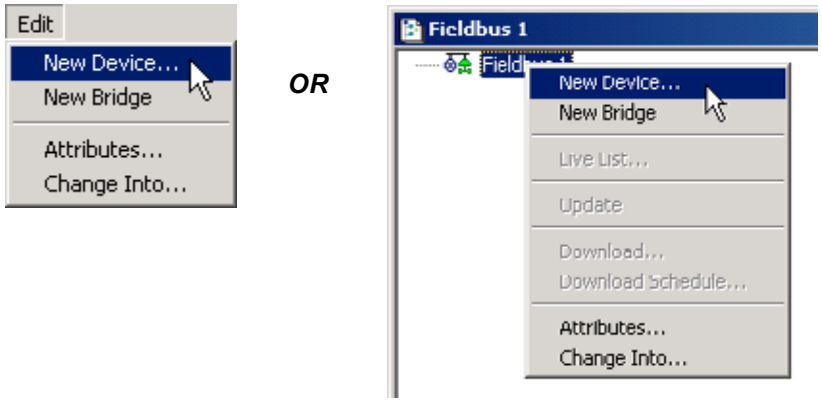


Figure 3.14. Edit Menu & Popup Menu: New Device

The *New Device* dialog box will open:

1. Select a *Device Manufacturer* from the list.
2. Select the *Device Type* provided by the manufacturer selected.
3. Select the *Device Revision*.
4. Select the *DD Revision*.
5. Select the *CF Revision*.
6. Type the *Device ID*.
7. Type a related tag for the *Device*.
8. Click *OK*.

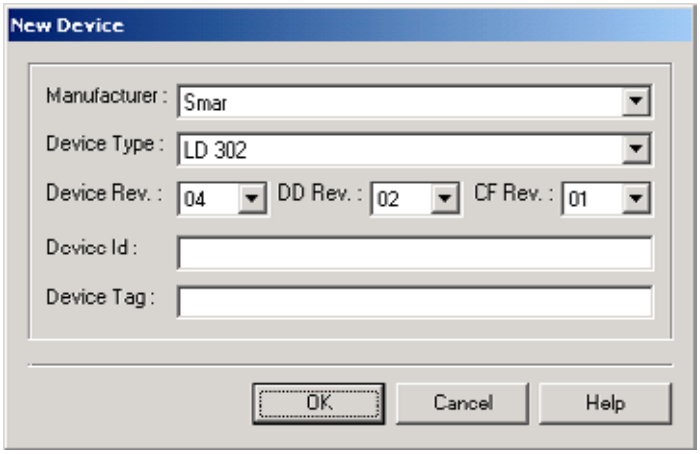


Figure 3.15. Device Dialog Box

NOTE

If the user does not type a *Tag*, *Device n* will be the default, where *n* is a sequential number for the *Devices*.

The *Fieldbus* window should look like the following figure:

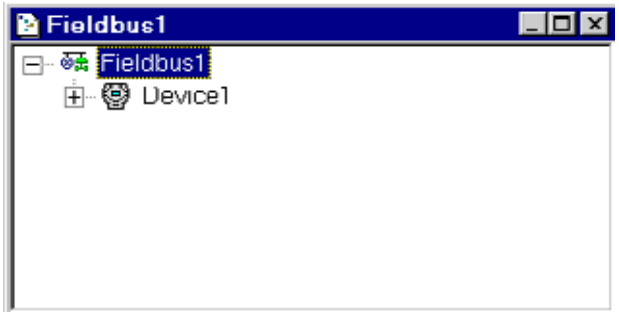


Figure 3.16. Fieldbus Window

Changing Device Attributes

To change the *Device* attributes, select its icon, go to the *Edit* menu and click *Attributes*. Or activate the *Device* popup menu by right-clicking its icon. Click the item *Attributes*. See the following figures:

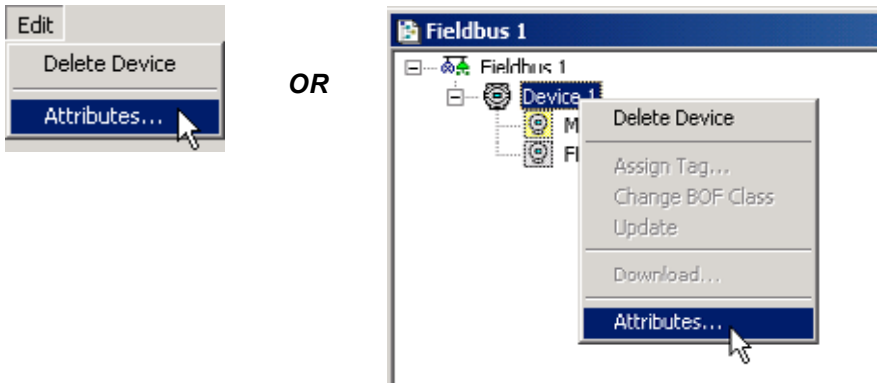


Figure 3.17. Edit Menu & Popup Menu: Device Attributes

The *Device Attributes* dialog box will open. Change the attributes of the *Device* and click *OK*:

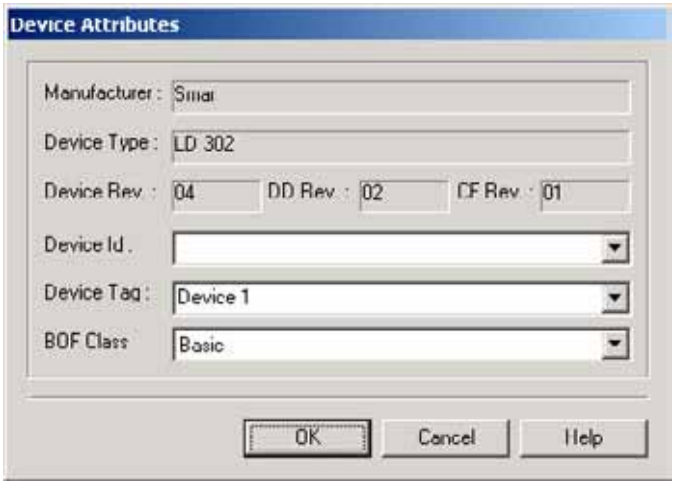


Figure 3.18. Device Attributes Dialog Box

Master Backup Device

To make a *Device* work as a *Master Backup*, a *Link Master* should be selected:

1. Click the down arrow of the *BOF Class* box.
2. Select the option *Link Master*.
3. Click *Ok*.

See the following figure:

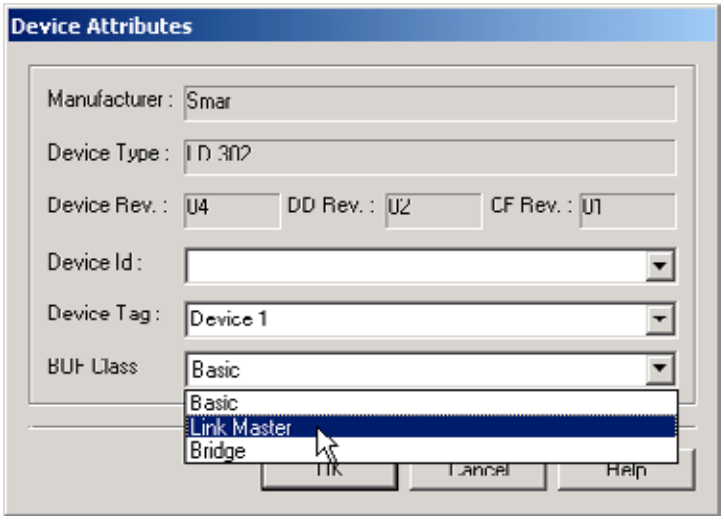


Figure 3.19. Configuring the Link Master Device

When SYSCON is online, activate the *Device* menu and select the option *Change BOF Class*. SYSCON will promptly show a message asking to re-initialize the *Device*. The *Device* will operate as a *Link Master*.

NOTE
During the download, all *Master Backups* in the *Fieldbus Network* will be configured with the *Traffic Schedule*.

Deleting Devices

To remove a *Device* from the *Fieldbus* window, select its icon, go to the *Edit* menu and click *Delete Device*. Or activate the *Device* popup menu by right-clicking its icon. Click the item *Delete Device*. See the following figures:

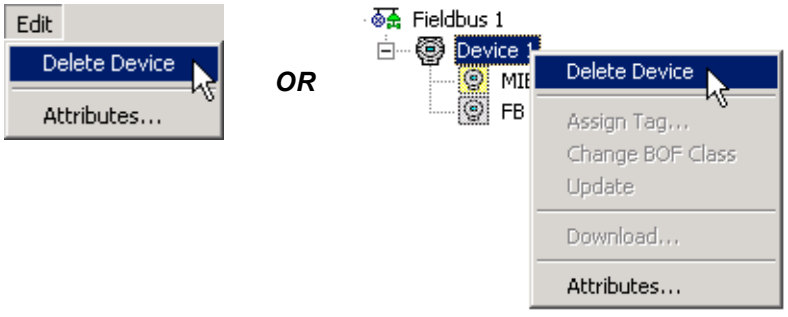


Figure 3.20. Edit Menu & Popup Menu: Delete Device

A quick way of removing a *Device* is to select its icon on the *Fieldbus* window and press the *Delete* key, on the keyboard.

The *Warning* dialog box will appear. To confirm the deletion, click *Yes*.

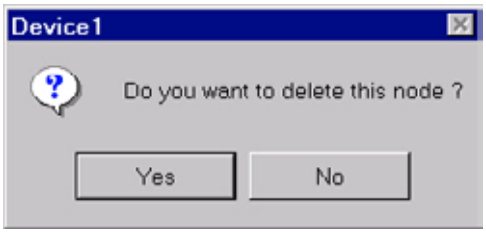


Figure 3.21. Confirm Deletion Dialog Box

NOTE
Before deleting a *Device*, all *Blocks* attached must be removed!

Ordering Devices

Select a *Device* icon and drag it over the other *Device* icon. The *Device* selected will be placed above the first one on the list.

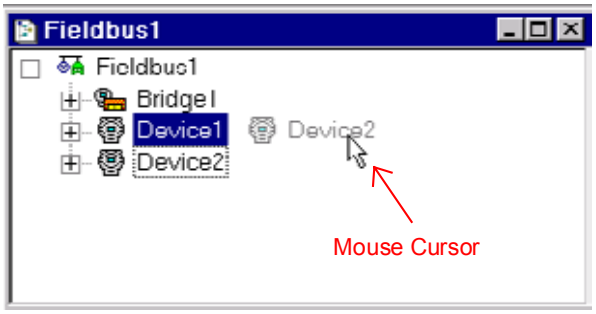


Figure 3.22. Ordering Devices at the Fieldbus Window

The *Fieldbus* window should look like the following figure:

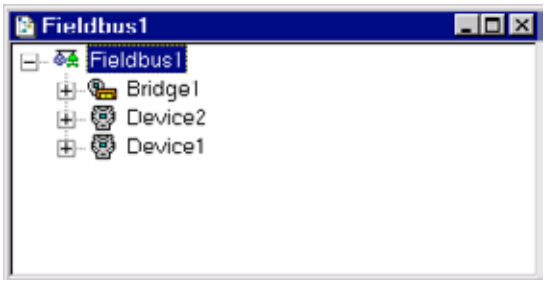


Figure 3.23. Fieldbus Window

3.2.3 Bridges

Use *Bridges* when the user wants a *Block* to supply a value to another *Block* but these *Blocks* are inside different *Fieldbus Links*.

Creating Bridges

To create a *Bridge*, select the *Fieldbus* icon, on the *Fieldbus* window, go to the *Edit* menu and click *New Bridge*. Or activate the *Fieldbus* popup menu by right-clicking its icon. Click the item *New Bridge*. See the following figures:

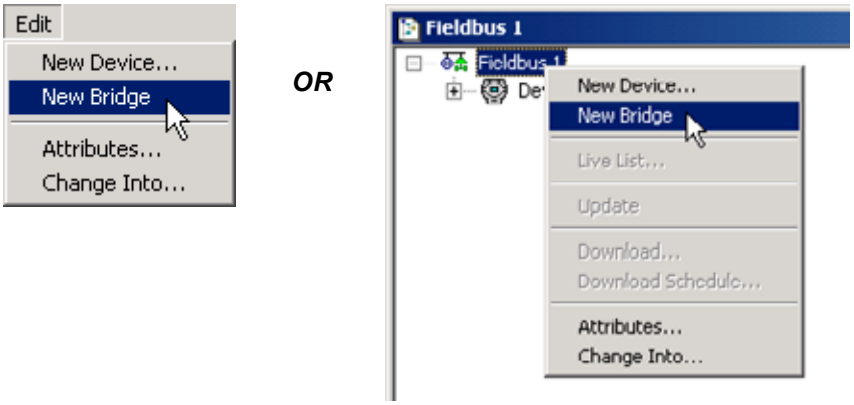


Figure 3.24. Edit Menu & Popup Menu: New Bridge

The *New Bridge* dialog box will open:

1. Select a *Bridge Manufacturer* from the list.
2. Select the *Device Type* provided by the manufacturer selected.
3. Select the Device Revision.
4. Select the *DD Revision*.
5. Select the *CF Revision*.
6. Type the *Device ID*.
7. Type a related tag for the *Bridge*.
8. Click *OK*.

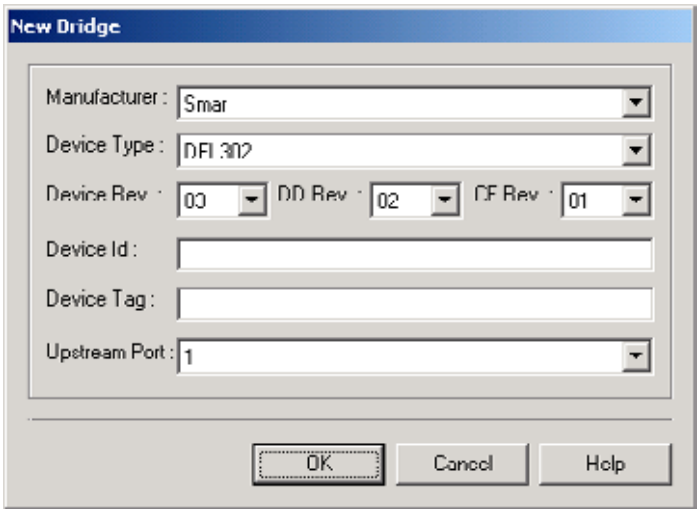


Figure 3.25. Bridge Dialog Box

NOTE
If the user does not type a *Tag*, the default one will be *Bridge n*, where *n* is a sequential number for the *Bridges*.

When the user is finished creating the *Bridge*, the *Project* and *Fieldbus* window should look like the following figure:

Figure 3.26. Project and Fieldbus Window

In the *Project* window, the *Bridge* contains the *Fieldbus*.

Changing Bridge Attributes

To change the *Bridge* attributes, select the *Bridge* icon, go to the *Edit* menu and click *Attributes*. Or activate the *Bridge* popup menu by right-clicking its icon. Click the item Attributes. See the following figures:

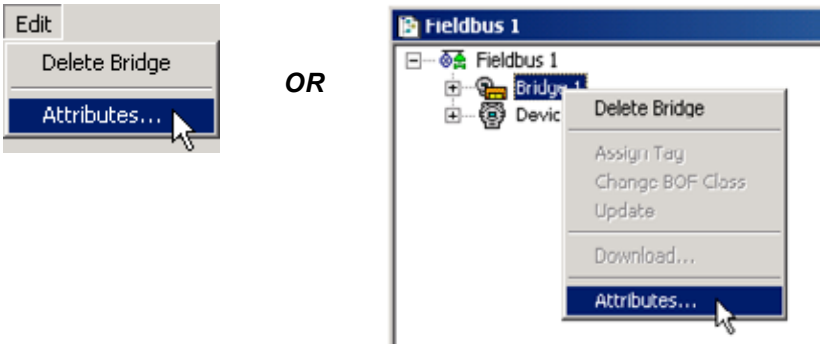


Figure 3.27. Edit Menu & Popup Menu: Bridge Attributes

The *Bridge* dialog box will open. Change the *Bridge* attributes and click *Ok* to conclude.

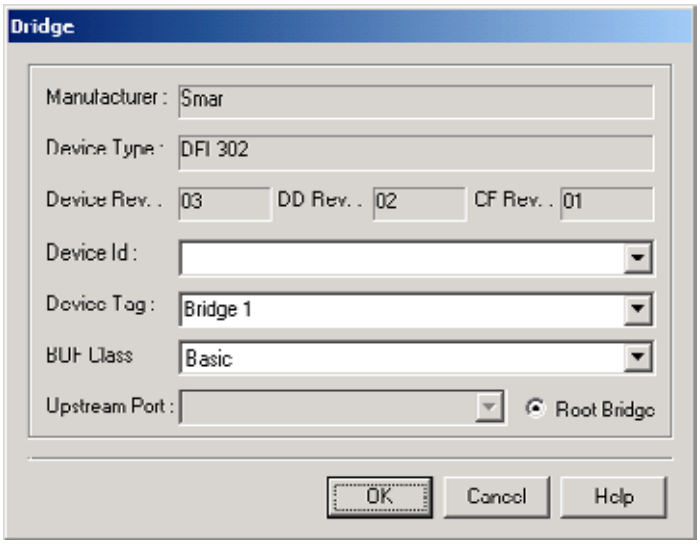


Figure 3.28. Bridge Attributes Dialog Box

Changing the Root Bridge

Note the following situation:

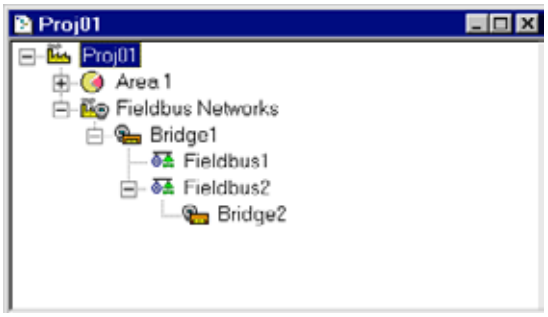


Figure 3.29. Project Window

The *Fieldbus Networks* tree begins from the *Bridge1*. The user can change this configuration to make the *Fieldbus Networks* tree begin from the *Bridge2*.

Select the *Bridge2* icon and activate its popup menu by right-clicking its icon. Click the item *Attributes*.

The *Bridge* dialog box will open. Check the *Root* option and click *OK*. See the following figure:

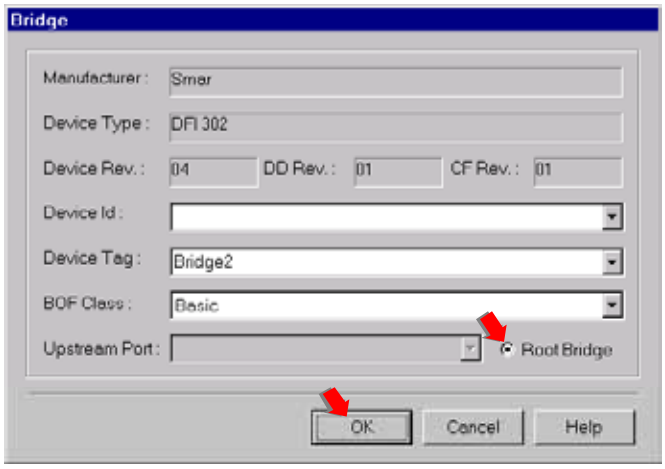


Figure 3.30. Changing the Root Bridge

Now, the *Bridge2* is the root of the *Fieldbus Networks* tree:

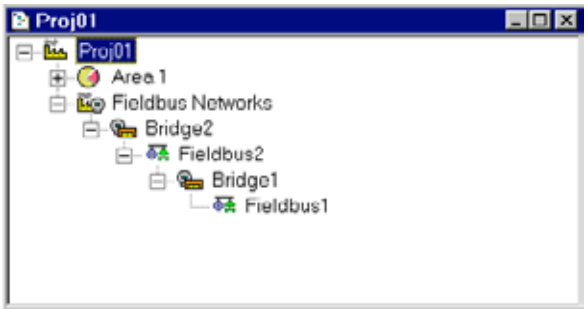


Figure 3.31. Project Window

Deleting Bridges

To remove a *Bridge*, select its icon on the *Fieldbus* window, go to the *Edit* menu and click *Delete Bridge*. Or activate the *Bridge* popup menu by right-clicking its icon. Click the item *Delete Bridge*. See the following figures:

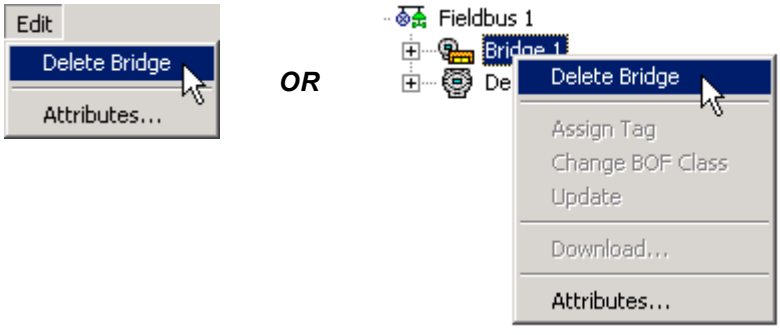


Figure 3.32. Edit Menu & Popup Menu: Delete Bridge

A quick way of removing a *Bridge* is to select its icon and press the *Delete* key, on the keyboard.

The *Warning* dialog box will open. To confirm the deletion, click *Yes*.

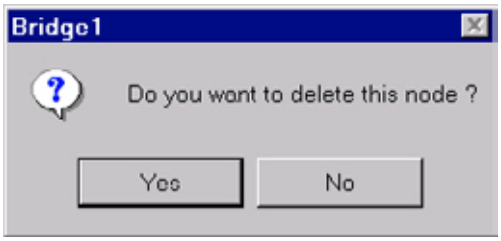


Figure 3.33. Confirm Deletion Dialog Box

NOTE
When a *Bridge* is deleted, all of the connections will also be deleted.

Connecting a Bridge to a Fieldbus

Note the following situation:

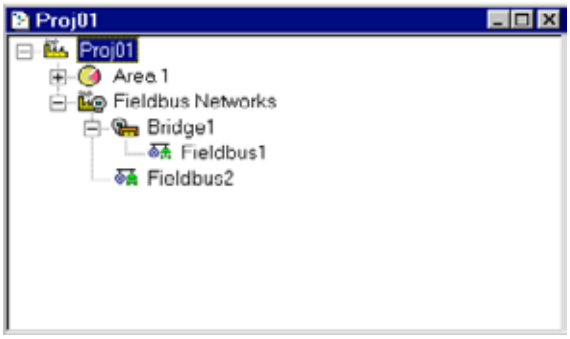


Figure 3.34. Project Window

If there have been at least two *Fieldbuses* added to the Physical Project, and a *Bridge* to one *Fieldbus*, the user can connect this *Bridge* to the other one.

Select the *Bridge* icon on the *Project* window, go to the *Edit* menu and click *Connect to*. Or activate the *Bridge* popup menu by right-clicking its icon. Click the item *Connect to*. See the following figures:

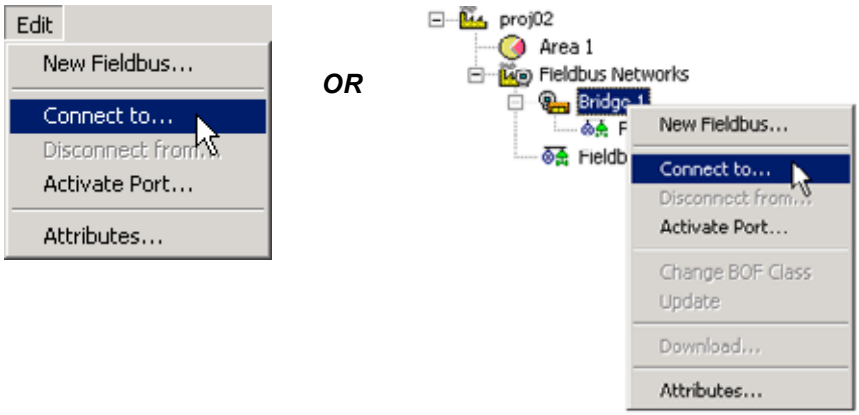


Figure 3.35. Edit Menu & Popup Menu: Connect to Fieldbus

The *Connect Bridge to* dialog box will open:

1. Select the *Fieldbus* in the *Tag* box.
2. Select the port to connect the *Fieldbus*, in the *Upstream Port*.
3. Click *Ok*.

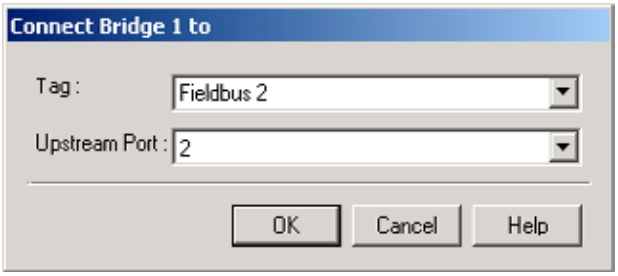


Figure 3.36. Connect Bridge Dialog Box

The following figure shows the project tree after the connection:

Figure 3.37. Project Window

The *Fieldbus1* and the *Fieldbus2* icon will be attached to the *Bridge* icon.

Disconnecting a Bridge from a Fieldbus

Note the following situation:

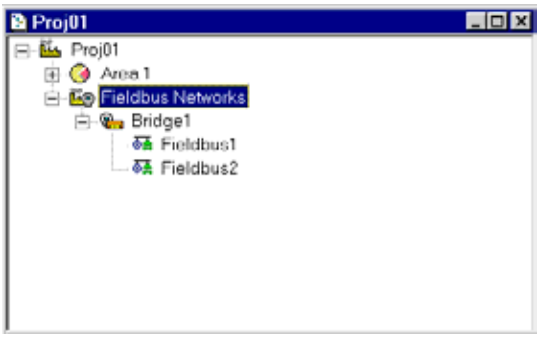


Figure 3.38. Project Window

A *Bridge* can be disconnected from a *Fieldbus*.

Select the *Bridge* icon, go to the *Edit* menu and click *Disconnect from*. Or activate the *Bridge* popup menu by right-clicking its icon. Click the item *Disconnect from*. See the following figures:

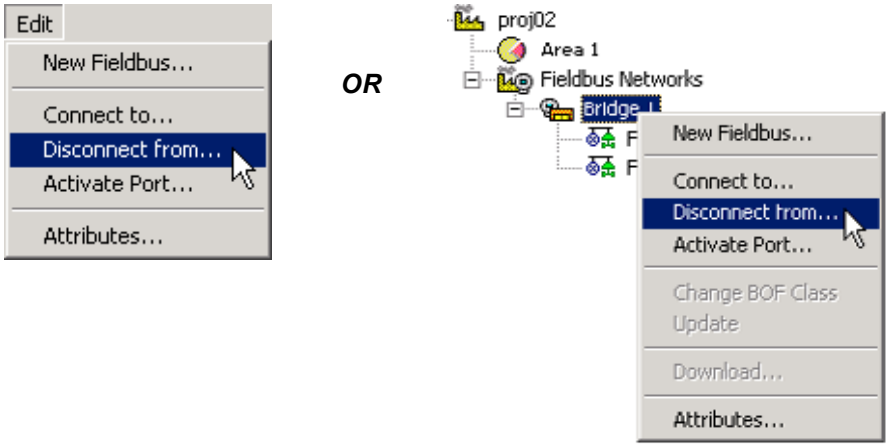


Figure 3.39. Edit Menu & Popup Menu: Disconnect from Fieldbus

The *Disconnect Bridge from* dialog box will open. Select the *Fieldbus* in the *Fieldbus* box and click *Ok*.

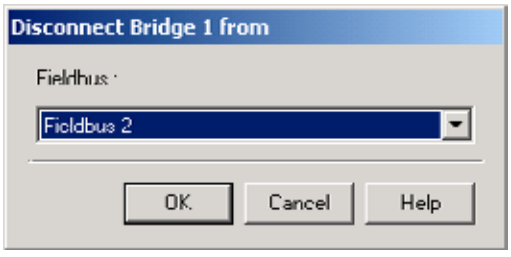


Figure 3.40. Disconnect Bridge Dialog Box

The following figure shows the project tree after disconnection:

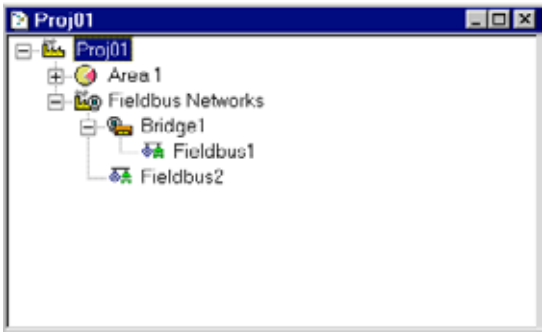


Figure 3.41. Project Window

The *Fieldbus2* icon will no longer be attached to the *Bridge* icon.

3.2.4 Function Blocks

Creating Blocks

To create a *Function Block* when at least one *Device* has already been added to the configuration, click the *Device* expansion sign, ⊞, and select the *FB* icon. Go to the *Edit* menu and click *New Block*. Or activate the *FB* popup menu, right-clicking its icon. Click the item *New Block*. See the following figures:

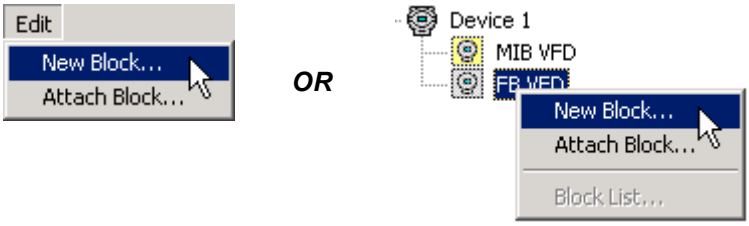


Figure 3.42. Edit Menu & Popup Menu: New Block

The *New Block* dialog box will open:

1. Select a *Block* type.
2. Type a related tag for the *Block*.
3. Click *OK*.

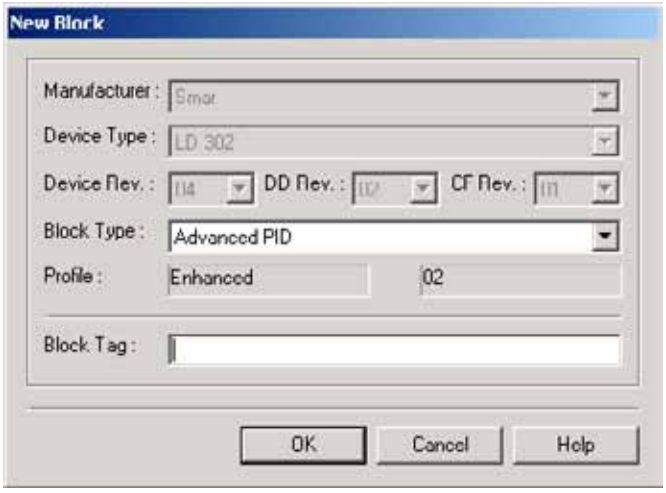


Figure 3.43. Function Block Dialog Box

NOTE

If a new *Tag* is not typed, *Block n* will be the default, where *n* is a sequential number for the *Blocks* created in the project configuration.

The *Fieldbus* window should look like the figure below:

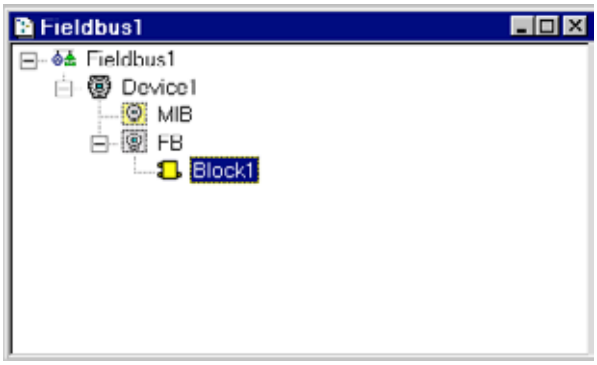


Figure 3.44. Fieldbus Window

Once the *Blocks* are added, they can be attached to the *Logical Project*. (See section *Attaching a Block to the Control Module*)

Double-click the *Block* icon to open the *Block Characterization* dialog box and edit the *Parameters*. (See section *Block Off Line Characterization*)

Changing Block Attributes

To change the *Block* attributes, select the *Block* icon, go to the *Edit* menu and click *Attributes*. Or activate the *Block* menu, by right-clicking its icon. Click the item *Attributes*. See the following figures:

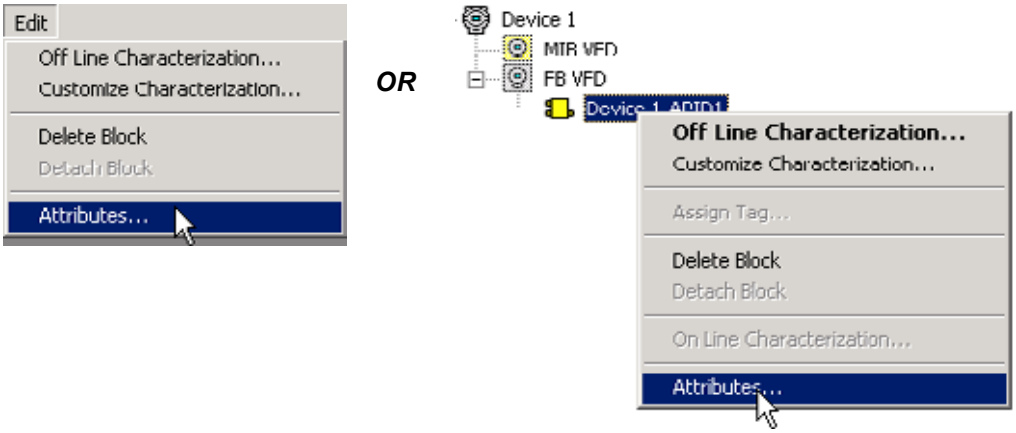


Figure 3.45. Edit Menu & Popup Menu: Function Block Attributes

The *Block Attributes* dialog box will open. Type the new *Block* tag and click *OK*.

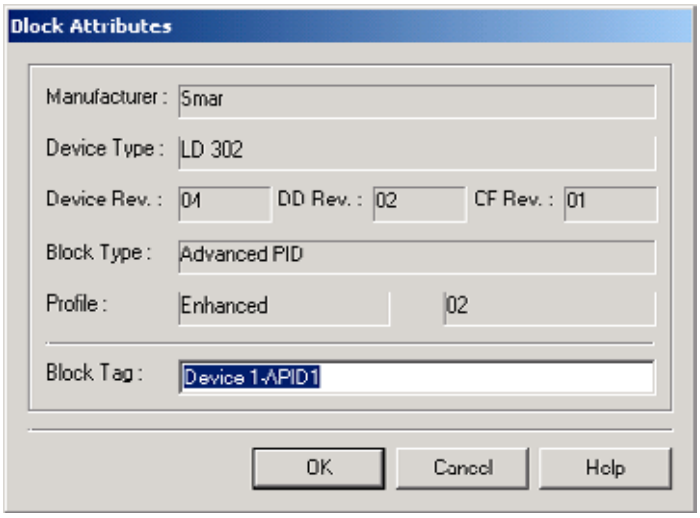


Figure 3.46. Function Block Attributes Dialog Box

Deleting Blocks

To remove a *Block* from a *Fieldbus*, select its icon, go to the *Edit* menu and click *Delete Block*. Or activate the *Block* popup menu, by right-clicking its icon. Click the item *Delete Block*. See the following figures:

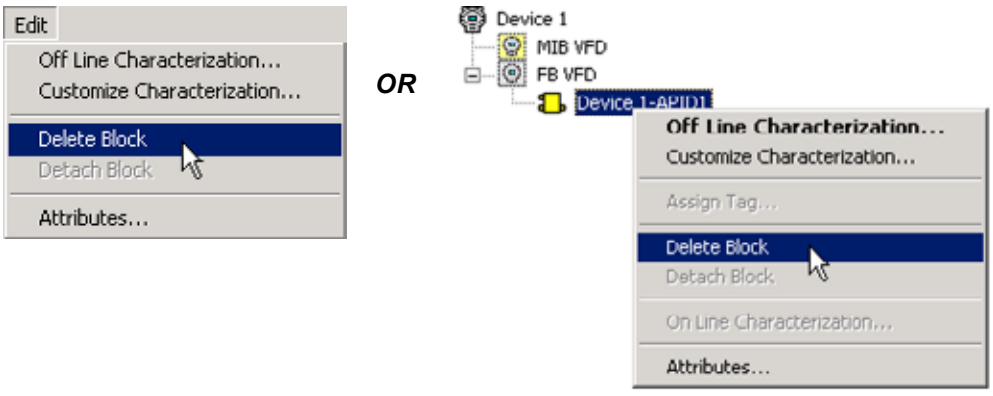


Figure 3.47. Edit Menu & Popup Menu: Delete Function Block

A quick way of removing a *Block* is to select its icon and press the *Delete* key, on the keyboard.

The *Warning* dialog box will open. To confirm the deletion, click *Yes*.

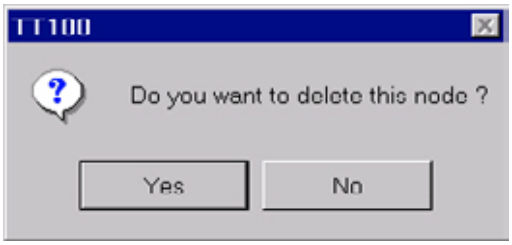


Figure 3.48. Confirm Deletion Dialog Box

Attaching Blocks to the Device

If at least one *Block* has been added to the *Logical Project* (see section *Creating Blocks* in the *Logical Project*), that *Block* can be attached to the *Device*.

On the *Fieldbus* window, select the *FB* icon to be attached to the *Block*. Go to the *Edit* menu and click *Attach Block*. Or activate the *FB* popup menu, by right-clicking its icon. Click the item *Attach Block*. See the following figures:

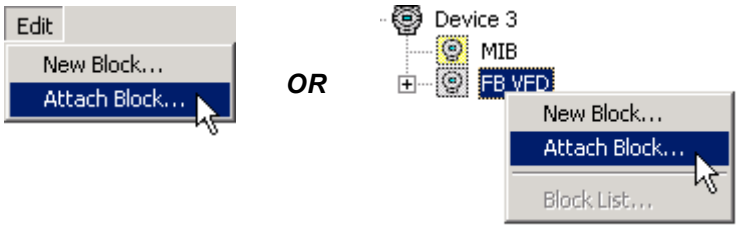


Figure 3.49. Edit Menu & Popup Menu: Attach Block

The *Attach Block* dialog box will open. Click the down arrow to select the *Block* to be attached. Click *OK* to add the *Block* to the *Physical Project*:

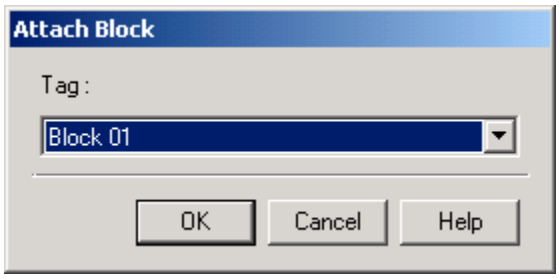


Figure 3.50. Attach Block Dialog Box

If no *Block* is to be attached, click *Cancel*.

Detaching Blocks from the Device

A *Block* can only be detached if it exists in the *Control Module* and in the *Device*.

When a *Block* is detached from the *Physical Project*, it is removed from the *Device*. The *Block* will still be attached to the *Control Module*.

On the *Fieldbus* window, select the *Block* icon to be detached from the *Physical Project*. Go to the *Edit* menu and click *Detach Block*. Or activate the *Block* popup menu, right-clicking its icon. Click the item *Detach Block*. See the following figures:

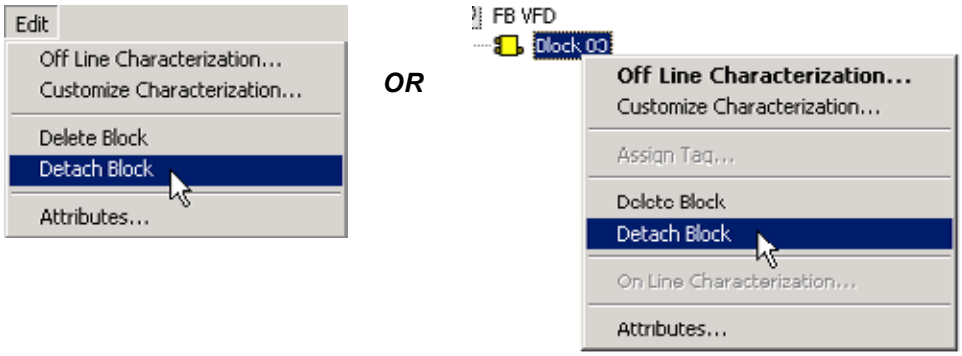


Figure 3.51. Edit Menu & Popup Menu: Detach Block

The *Warning* dialog box will open. If the *Block* is to be detached, click *Yes*.

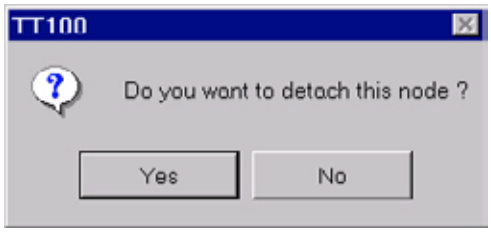


Figure 3.52. Detach Block Dialog Box

The *Block* is removed from the *Device* but it still exists on the *Project*, attached to the *Control Module*.

Ordering Blocks

NOTE
The user can define the download sequence, by ordering the *Devices*, the *Blocks*, and the *Parameters* at the *Fieldbus* window.

Select a *Block* icon and drag it over the other *Block* icon. The *Block* selected will be placed above the other one on the list.

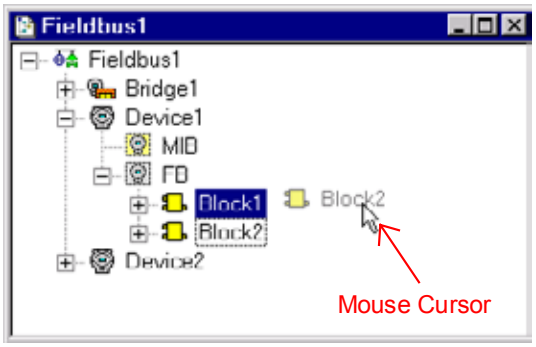


Figure 3.53. Ordering Blocks at the Fieldbus Window

The *Fieldbus* window should look like the following figure:

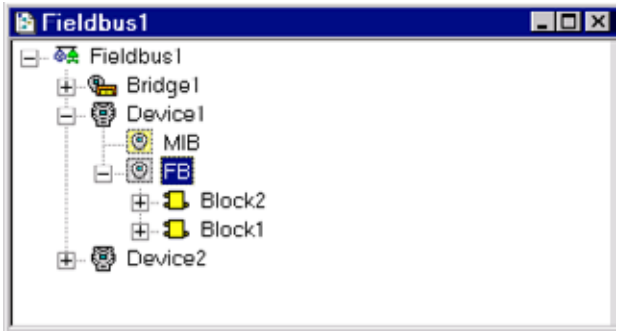


Figure 3.54. Fieldbus Window

3.2.5 Parameters

Ordering Parameters

Select a *Parameter* icon and drag it over the other *Parameter* icon. The *Parameter* selected will be placed above the other one on the list.

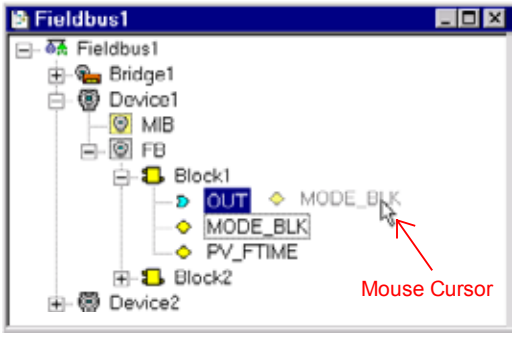


Figure 3.55. Ordering Parameters at the Fieldbus Window

The *Fieldbus* window should look like the following figure:

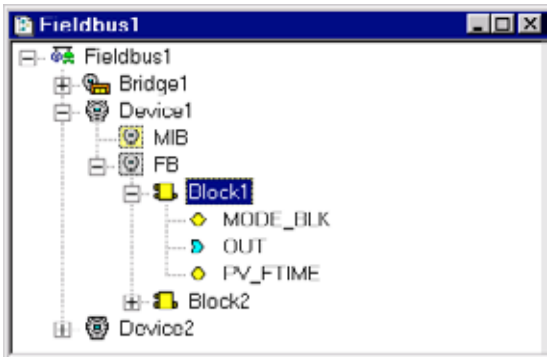


Figure 3.56. Fieldbus Window

The changes made to the *Parameters* list at the *Fieldbus* window will reflect in the *Process Cell* window.

3.2.6 Topology Window

Creating the Topology Drawing

To initialize the *Topology* window, select the *Fieldbus Networks* icon, go to the *View* menu and click *Expand*. Or activate the *Fieldbus Networks* popup menu by right-clicking its icon. Click the item *Expand*. See the following figures:

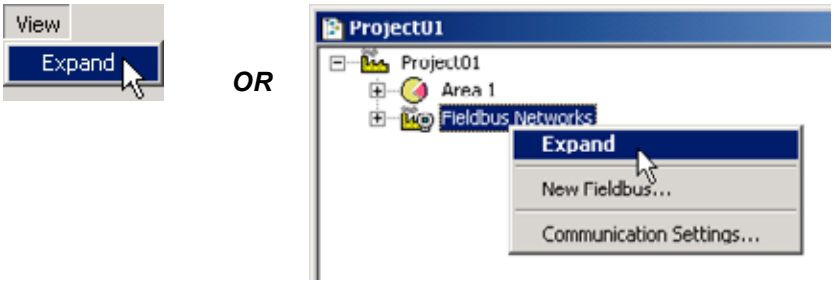


Figure 3.57. View Menu & Popup Menu: Expand Topology Window

Double-clicking the *Fieldbus Networks* icon also opens the *Topology* window.

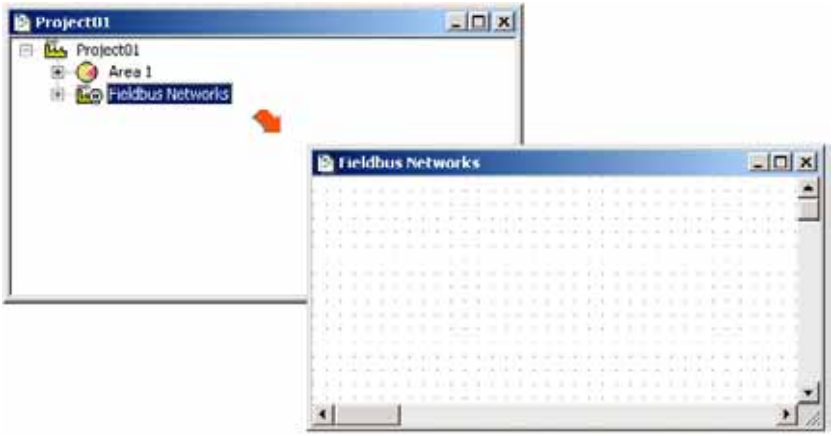


Figure 3.58. Topology Window

Opening Existing Topologies

If changes have been made on a *Topology* window and saved, use the steps described in the section above to open the existing *Topology*.

Then, the *Topology* window should look like the example below:

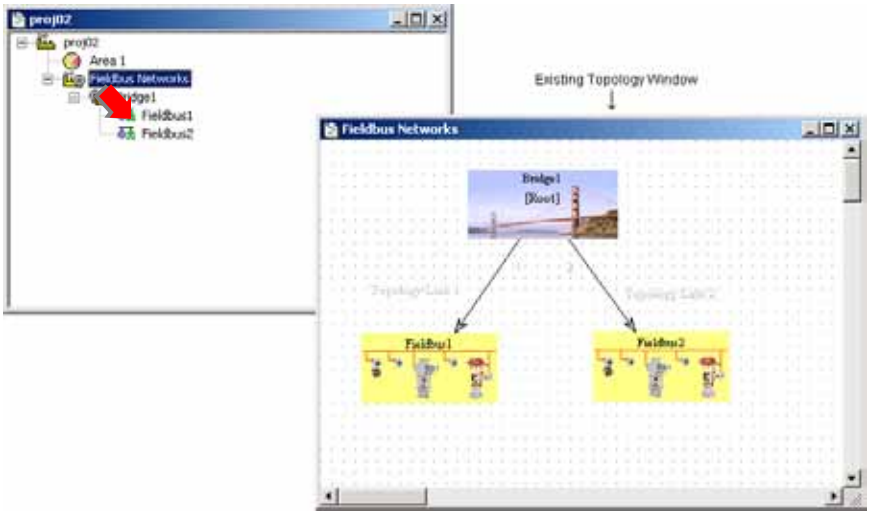


Figure 3.59. Topology Window

Saving Topologies

The *Topology* can be saved after modifying the drawing area, for example, adding a *Bridge*.

To save the *Topology* window, go to the *Project File* menu and click *Save*, as the following figure shows:

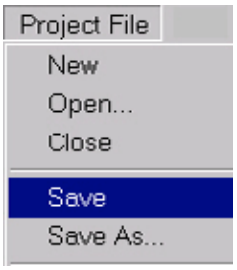


Figure 3.60. Project File Menu: Save Topology

Or click the *Save* button, , on the *General Operation* toolbar, under the *Menu* bar.

Anytime the drawing is changed, do not forget to save it.

Closing and Exiting the Topology Window

As the *Topology* window is not an independent one, there is no exiting command. To close it, go to the *Project File* menu and click *Close* (since the focus is on this window), as the figure shows:

Figure 3.61. Project File Menu: Close Topology

Or click the *Close* button, , on the upper right corner of the *Topology* window.

Adding Bridges to the Topology

There are two ways of adding *Bridges* to the *Topology* window:

a) Dragging Bridges from the Project Window

Once a *Bridge* has been added to the project, the user can drag it to the *Topology* window to start the linking process.

In this case, the user will work with two different windows: the *Project* window and the *Topology* window.

Use the option *Tile* on the *Window* menu to organize the windows and make them easy to be used.

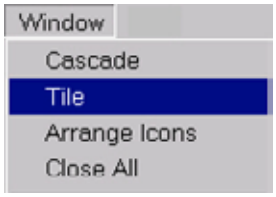


Figure 3.62. Window Menu: Tile

Now, click the *Bridge* icon, in the *Project* window, and drag it to where it will be placed, in the *Topology* window drawing area. Observe the following diagram:

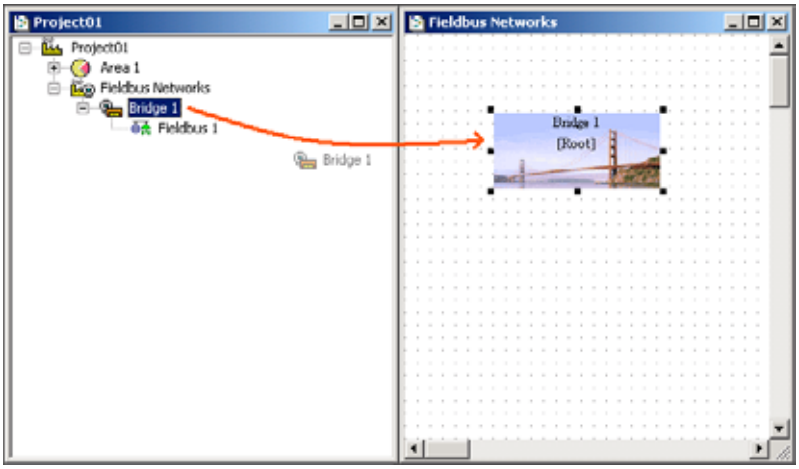


Figure 3.63. Dragging Bridges to the Topology Window

b) Creating Bridges in the Topology Window

In the previous case, the user already had *Bridges* added to the project. Now, a new *Bridge* can be created in the *Topology* window.

First, click on the *Topology* window and check the *Topology* toolbar to be sure it is open. If it is not, go to the *Tools* menu and point to the item *ToolBoxes*. The option *Topology* should be checked (➳).

Click the *Bridge* button, , on the *Topology* toolbar.

When the cursor is placed in the *Topology* window drawing area, it will turn into a cross. Use the cursor to click on the drawing area.

The *New Bridge* dialog box will open:

1. Select the *Bridge Manufacturer* from the list.
2. Select a *Device Type* provided by the manufacturer that has been selected.
3. Select the *Device Revision*.
4. Select the *DD Revision*.
5. Select the *CF Revision*.
6. Type a related tag for the *Bridge.*
7. Click *OK*.

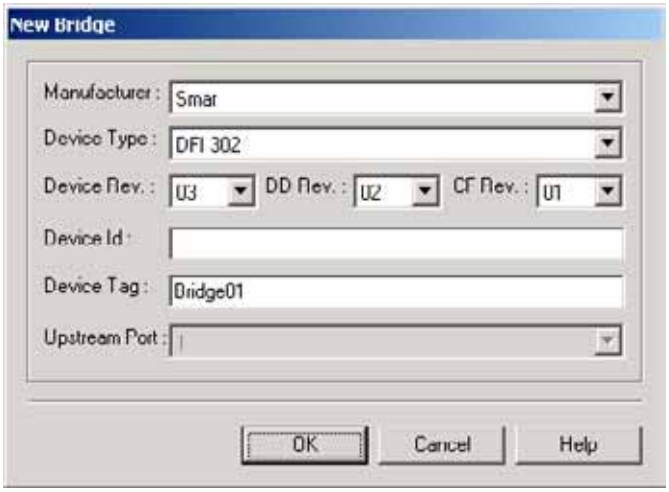


Figure 3.64. New Bridge Dialog Box

The graphical representation of the *Bridge* will be drawn in the *Topology* window.

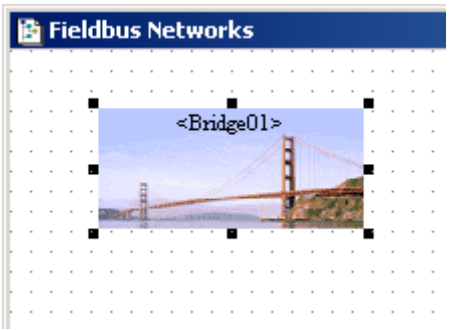


Figure 3.65. New Bridge in the Topology Window

Removing Bridges from the Topology

Be very careful when removing a *Bridge* from the *Topology* window! The *Bridge* will be removed from the *Topology* window and from the project.

Click the *Select* button, , on the *Topology* toolbar, and select the *Bridge* to be removed, in the *Topology* window. More than one *Bridge* can be selected.

Go to the *Edit* menu and click *Delete*. Or press the *Delete* key, on the keyboard.

The *Bridge Deletion* dialog box will open. If more than one *Bridge* is selected, a dialog box will open to confirm the deletion of each *Bridge*. Observe the following figure:

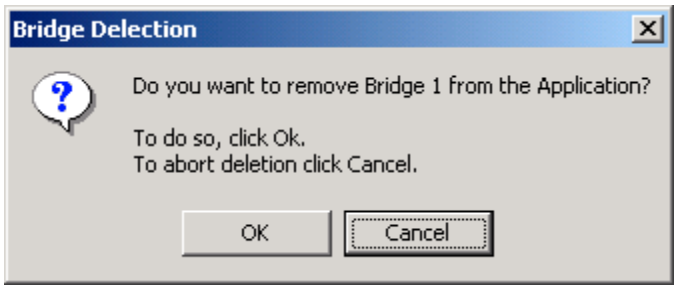

Bridge Delection
Do you want to remove Bridge 1 from the Application?
To do so, click Ok.
To abort deletion click Cancel.
OK
Cancel

Figure 3.66. Bridge Deletion

Click *Ok* to remove the *Bridge* from the *Project*. **Attention**: clicking this button will remove the *Bridge* from the *Topology* window and from the *Project*. The *Bridge* will no longer exist in the project.

If the *Bridge* is not to be deleted, click *Cancel*.

Adding a Fieldbus to the Topology

a) Creating a Fieldbus in the Topology Window

Click on the *Topology* window and check the *Topology* toolbar to be sure it is open. If it is not, go to the *Tools* menu and point to the item *ToolBoxes*. The option *Topology* should be checked (➵).

Click the *Fieldbus* button, , on the *Topology* toolbar.

When the cursor is placed in the *Topology* window drawing area, it will turn into a cross. Use the cursor to click on the drawing area.

The *New Fieldbus* dialog box will open:

1. Select the *Type* for the *Fieldbus*.
2. Type a related tag for the *Fieldbus*.
3. Click *OK*.

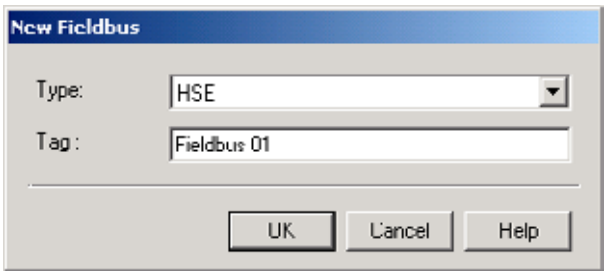


Figure 3.67. New Fieldbus Dialog Box

The graphical representation of the *Fieldbus* will be drawn in the *Topology* window and attached to the *Fieldbus Networks* icon in the *Project* window.

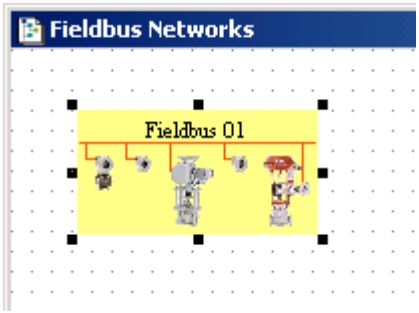


Figure 3.68. New Fieldbus in the Topology Window

b) Dragging Fieldbus from the Project Window

Once a *Fieldbus* has been added to the project, the user can drag it to the *Topology* window.

The user will work with two different windows: the *Project* window and the *Topology* window. Use the option *Tile* on the *Window* menu to organize the windows and make them easy to be used.

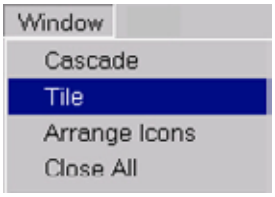


Figure 3.69. Window Menu: Tile

Click the *Fieldbus* icon, in the *Project* window, and drag it to where it will be placed, in the *Topology* window drawing area. Observe the following diagram:

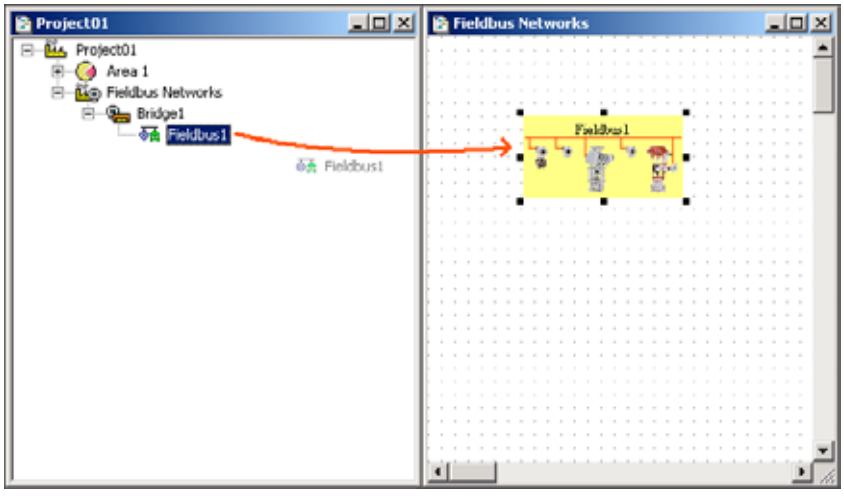


Figure 3.70. Dragging a Fieldbus to the Topology Window

Removing Fieldbuses from the Topology

When removing a *Fieldbus* from the *Topology* window, it will be removed from the *Project* window also.

Click the *Select* button, , on the *Topology* toolbar, and select the *Fieldbus* to be removed, in the *Topology* window. More than one *Fieldbus* can be selected.

Go to the *Edit* menu and click *Delete*. Or press the *Delete* key, on the keyboard.

The *Fieldbus Deletion* dialog box will open. If more than one *Fieldbus* is selected, a dialog box will open to confirm the deletion of each *Fieldbus*. Observe the following figure:

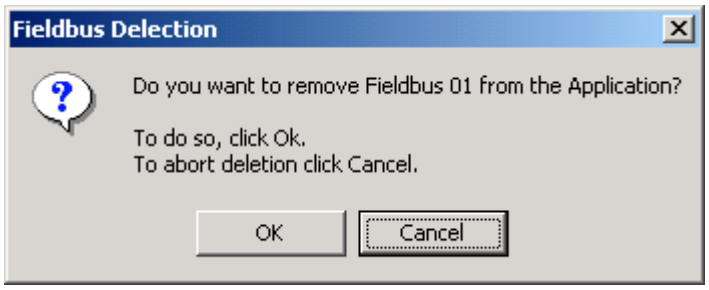

Fieldbus Delection
Do you want to remove Fieldbus 01 from the Application?
To do so, click Ok.
To abort deletion click Cancel.
OK
Cancel

Figure 3.71. Fieldbus Deletion

Click *Ok* to remove the *Fieldbus* from the *Project*. **Attention**: clicking this button will remove the *Fieldbus* from the *Topology* window and from the *Project*. The *Fieldbus* will no longer exist in the project.

If the *Fieldbus* is not to be deleted, click *Cancel*.

Selecting Objects at the Topology Window

a) Selecting One Object

To select only one object in the *Topology* window, click the *Select* button, , on the *Topology* toolbar, then click on the object.

b) Selecting a Group of Objects

To select two or more objects in the *Topology* window, there are two options:

Click the *Select* button, , on the *Topology* toolbar and click on one object. Press and hold the *Shift* key, on the keyboard, then click each object to be selected.

Or click anywhere in the blank area of the *Topology* window. While dragging the mouse, a rubber band appears around the objects selected.

c) Selecting All Objects

To select all objects drawn in the *Topology* window, go to the *Edit* menu and click *Select All*. Or use *Ctrl+A*, on the keyboard, to select the entire drawing area.

Changing Properties

Right-click the *Bridge* or the *Fieldbus* and the popup menu will open. Click the option *Properties*, as indicated below:

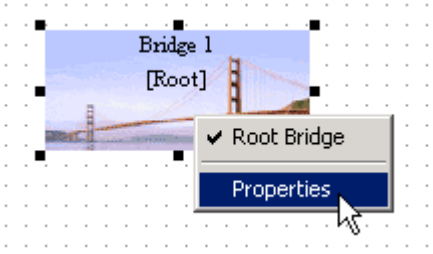


Figure 3.72. Bridge Menu: Properties

The following dialog box will open:

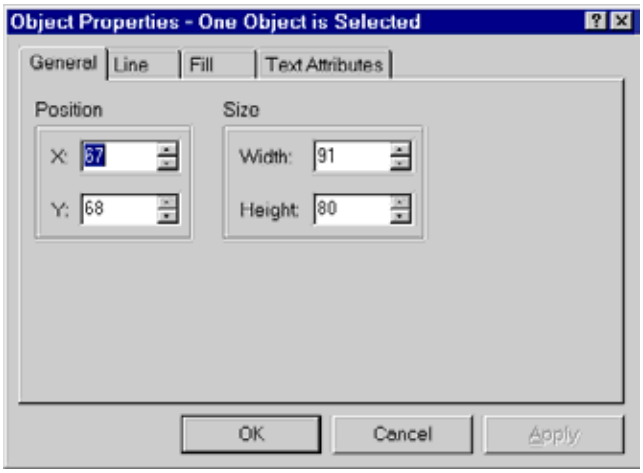


Figure 3.73. Object Properties Dialog Box

In each tab, the user can change different properties. See the section ***Object Properties***.

3.2.7 Topology Link

Creating Links

To link a *Bridge* to a *Fieldbus*, click the *Topology Link* button, , on the *Topology* toolbar, and click on the *Bridge*. The menu will open showing the ports available for the communication:

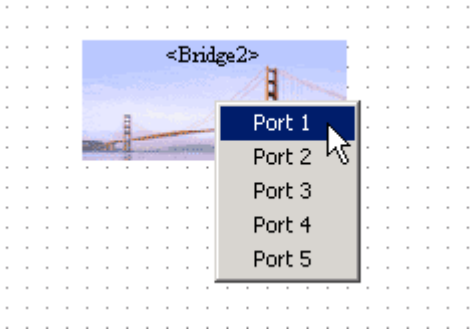


Figure 3.74. Example for the Bridge menu

Select the *Port* for the link. Drag the cursor to the target *Fieldbus* and click on it.

The *Link* will automatically be drawn:

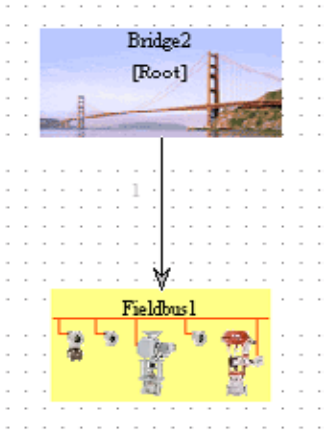


Figure 3.75. Topology Link

Link Attributes

A *Link* has several attributes, and can be changed. Use the *Select* Button, , on the *Topology* toolbar, to select the *Link*. Right-click on the *Link* to activate its popup menu.

Select the option *Show Connection Label* to show the link label.

On the *Reference Point* submenu, select the reference point for the *Modifying* tool. There are three options:

- *Ref. On Current Point*: the selected handle is the reference itself.
- *Ref. On Previous Point*: the selected handle will be placed based on the position of the previous handle.
- *Ref. On Next Point*: the selected handle will be placed based on the position of the next handle.

When clicking the item *Properties*, the *Object Properties* dialog box will open. The user can change the line and fill colors, for example.

Removing Links

To remove the *Link*, select the *Link* using the *Select* button, .

Go to the *Edit* menu and click *Delete*. Or press the *Delete* key, on the keyboard.

The *Topology Link Deletion* dialog box will open. If more than one *Link* is selected, a dialog box will open to confirm the deletion of each *Link*. Observe the following figure:

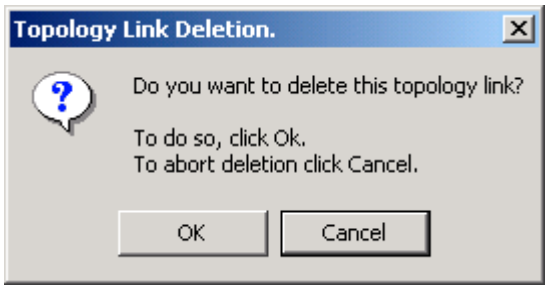


Figure 3.76. Topology Link Deletion

Click *Ok* to remove the *Link*. If the *Link* is not to be deleted, click *Cancel*.

Redrawing Links

A *Link* line can be redrawn by dragging the modifying handles in the drawing area, creating a new handle or removing a handle.

To create a new modifying handle, click on the *Link* line. To remove a modifying handle, right-click on the handle.

According to the reference point, hold the *Ctrl* key down while dragging the handle to draw a horizontal or vertical line from the reference handle. Or hold the *Shift* key down while dragging the handle to draw diagonal line from the reference handle.

4 Communication

4.1 Introduction

Once the configuration is completely ready, the user can make SYSCON communicate with the plant.

First, it is necessary to remember that a *PCI* board or a *DFI* must be included in the *Physical Project* configuration. If the user doesn't have a *Communication Interface* in the project configuration, see the section *Creating Bridges*. Select ***Smar*** as the *Bridge Manufacturer* and select ***PCI*** or ***DFI*** as the *Device Type*.

NOTE
SYSCON can detect errors in the server to avoid a crash in the system when operating offline. **After an error occurs in the server, SYSCON doesn't go to *Offline* mode automatically nor abort the download operation. The user must terminate the communication and restart it.**

4.2 Initializing Communication

To initialize the communication, click the *Operation Mode* button, , on the *General Operation* toolbar under the *Menu* bar.

The video clip below should appear for a few seconds. During this time, SYSCON will identify and attach any *Bridge* and *Fieldbus* to the real plant.

Figure 4.1. Initializing Communication

Next, the user will have to change the *Bridge* attributes. Select the Bridge ID from the *Device ID* list. Type a new tag related to the Bridge ID for the *Device* Tag. (See the section *Changing Bridge Attributes* for further information.)

NOTE

Once the *Bridge* attributes match the installed *Bridge* attributes, this step will no longer be necessary. SYSCON will automatically do the association.

When the *Fieldbus* window is opened, the following video clip should appear for a few seconds:

Figure 4.2. Initializing Fieldbuses Communication

The user can check the *Devices* communicating on the channel. Click on the *Fieldbus* icon, go to the *View* menu and click *Live List*. The user can also right-click the *Fieldbus* icon to activate its popup menu. Click the item *Live List*.

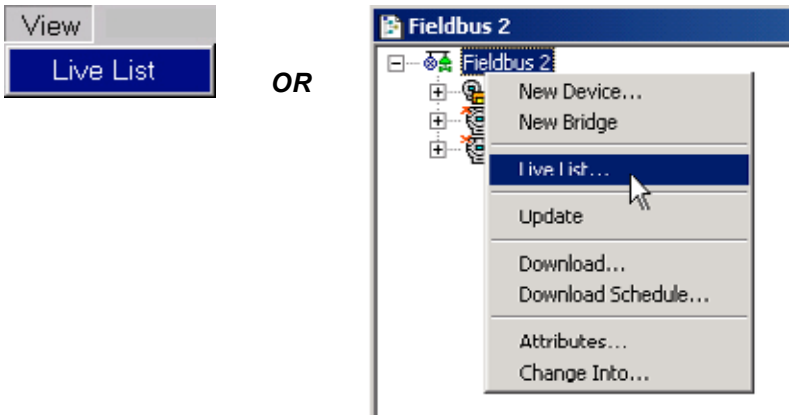


Figure 4.3. View Menu & Popup Menu: Live List

Each *Fieldbus* has its own *Live List*.

4.2.1 Associating Devices' IDs

After initializing the communication with the *Fieldbuses*, it is necessary to associate the *Devices* that are configured in the Project to the *Devices* in the *Live List*.

Open the *Device* dialog box to change its attributes and select the *Device ID* from the list. (See the section *Changing Device Attributes* for further information)

Repeat this procedure for each *Device* in every *Fieldbus*, if the *Device* hasn't been associated as yet.

NOTE

Once the Device tag or the Device ID matches any node in the Live List, SYSCON will automatically do the association.

4.2.2 Tags Assignment

In the previous section, one address was automatically assigned to each *Device*. Now, it is necessary to assign the tags to each one of these *Devices* and *Interfaces*.

On the *Fieldbus* window, click on each *Bridge* and *Device*, go to the *Communication* menu and click *Assign Tag*. The user can also activate the popup menu by right-clicking on their icons and selecting *Assign Tag*. See the following figure:

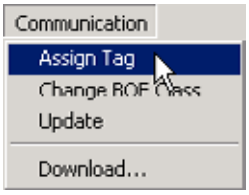


Figure 4.4. Communication Menu: Assign Tag

The tag written in the configuration will be sent to the *Device*, see the following clip:

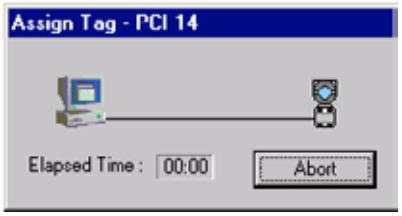


Figure 4.5. Assigning Tags

NOTE

To make sure that the tag assignment was successful, open the *Live List* of the *Fieldbus* (or segment) and see if the tag from the *Device* is the one that was sent.

4.2.3 Error Log Registry

The *Error Log* button will be enabled if an error has been reported to SYSCON during the communication.

It is important to clear the *Error Log Registry* before downloading the configuration, because any eventual error that might occur during the download process will be easily detected as the *Error Log* window pops up automatically at the occurrence of its first error.

Click the *Error Log* button, . It will open the *Error Log* window (This step will not be necessary in case this button is not enabled).

Right-click inside this window to activate the popup menu and select the option *Clear Log*. See the following figure:

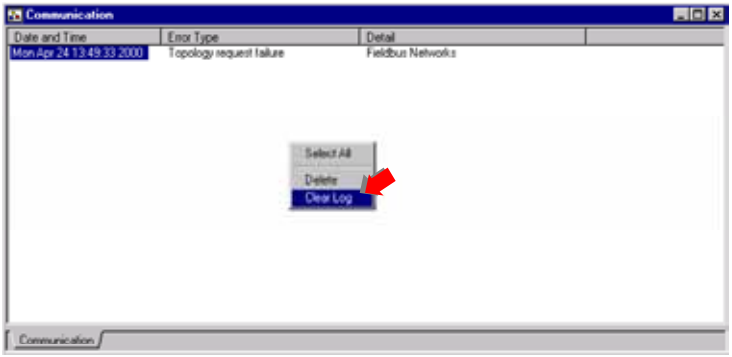


Figure 4.6. Error Log Window

4.2.4 Downloading the Configuration

Configuration Download

Since the communication at the *Fieldbus Networks* has been initialized by clicking the *Operation Mode* button, it is time to download the configuration.

In the *Fieldbus* window, click the *Fieldbus* icon, go to the *Communication* menu and click the item *Download*. Or right-click on the *Fieldbus* icon to activate its popup menu and select the item *Download*. See the following figures:

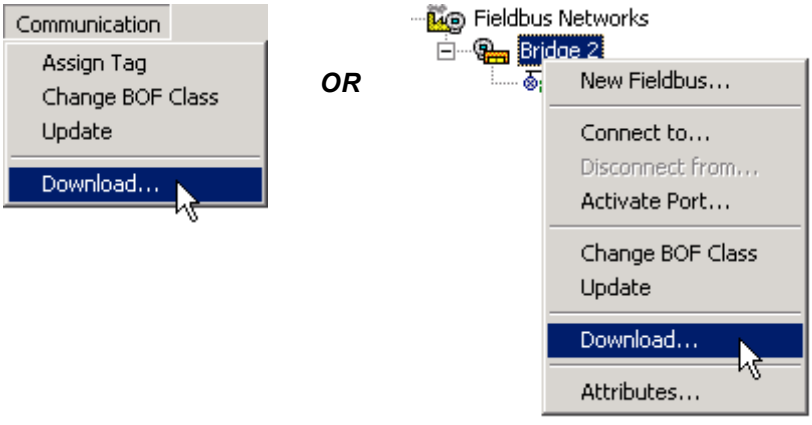


Figure 4.7. Communication Menu & Popup Menu: Download

While the configuration is being downloaded to the plant, the following dialog will be prompted:

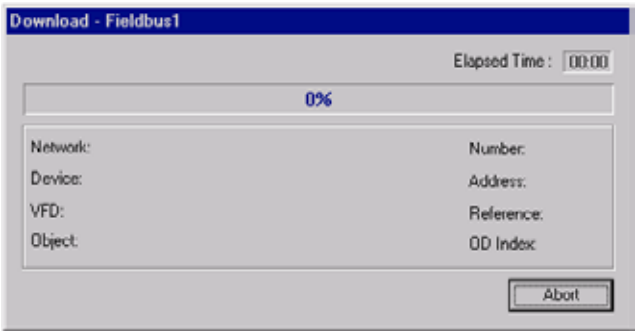


Figure 4.8. Downloading the Configuration

It is necessary to repeat this procedure for each *Fieldbus* (or segment).

Partial Download

In case a *Device* failed or after replacing a *Device*, the user can run a partial download for this *Device*, provided that it doesn't change the configuration. When the configuration is changed, it's up to the user to run a partial download for all *Devices* affected by the change. Otherwise, the partial download can produce unpredictable results.

Note that changes in one *Device* may affect others. If the user changes an external link for instance, it is affecting at least two *Devices* besides the LAS.

The partial download speeds up the download process. However, in case of doubts, it is strongly recommended using the complete download.

In the *Fieldbus* window, click on the *Device* icon, go to the *Communication* menu and click the item *Update*. Or right-click on the *Device* icon to activate its popup menu and select the item *Update*. See the following figures:

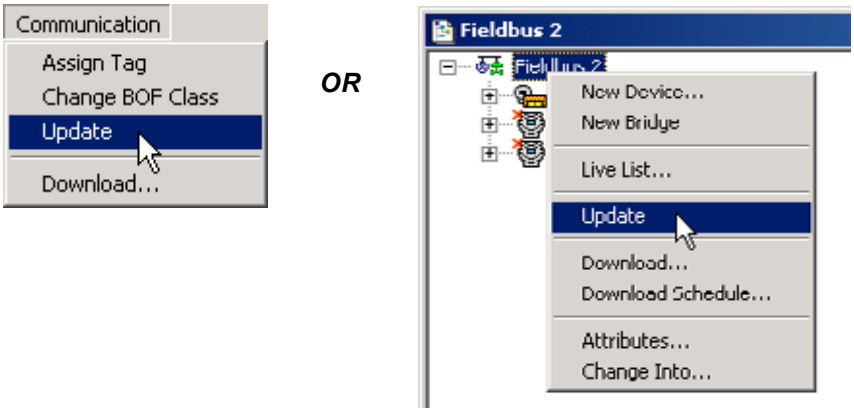


Figure 4.9. Communication Menu & Popup Menu: Update

The replaced *Device* tag will get out of the *Live List* and the new *Device* tag will appear.

Now the user can run the partial download.

In the *Fieldbus* window, click on the *Device* icon, go to the *Communication* menu and click the item *Download*. Or right-click on the *Device* icon to activate its popup menu and select the item *Download*. See the following figures:

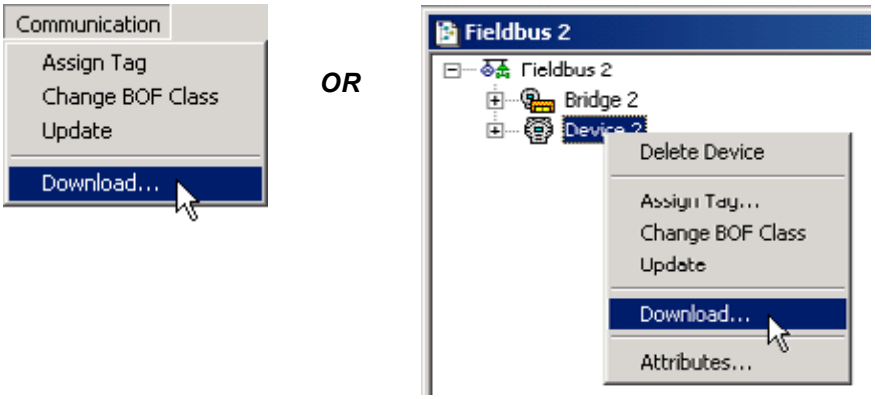


Figure 4.10. Communication Menu & Popup Menu: Download

4.2.5 Uploading the Configuration

Configuration Upload

This section describes the steps to upload the configuration from the *Field Devices* to the Project File. It is necessary to initialize the communication, before executing the Upload.

In the *Project* window, click on the *Fieldbus Networks* icon, go to the *Communication* menu and click the item *Upload*. Or right-click on the *Fieldbus Networks* icon to activate its popup menu and select the item *Upload*. See the following figures:

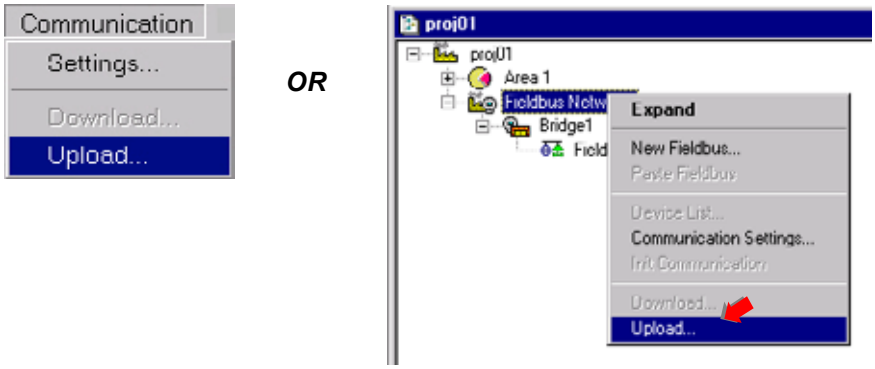


Figure 4.11. Communication Menu & Popup Menu: Upload

The *Upload* dialog box will open:

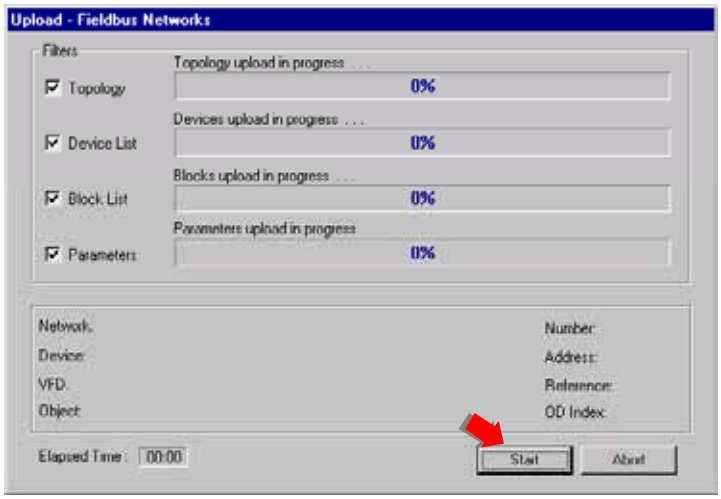


Figure 4.12. Upload Dialog Box

Set the *Upload Filters* by checking the *Topology* box, *Device List* box, *Block List* box and *Parameters* box. Click the button *Start*.

The progress bars indicate that SYSCON is reading the information from the *Fieldbuses* and adding the *Devices*, *Blocks* and *Parameters* to the Configuration File.

NOTE
At any time during the upload the user can stop this process by clicking *Abort* in the *Upload* dialog box.

Partial Upload

The user can run a partial upload for *Fieldbuses*, *Devices* or *Blocks* by setting the filters properly.

a) Topology Upload

Click on the *Fieldbus Networks* icon, on the *Project* window, and select *Upload* from the popup menu. On the *Upload* dialog box, select only the *Topology* box and click *Start*.

SYSCON will upload the *Topology*.

b) Device Upload

On the *Fieldbus* window, click on the *Fieldbus* icon and select *Upload* from the popup menu. On the *Upload* dialog box, select only the *Device List* box and click *Start*.

SYSCON will upload the *Devices* for the selected *Fieldbus*.

c) Block Upload

On the *Fieldbus* window, click on the *Device* icon and select *Upload* from the popup menu. On the *Upload* dialog box, select only the *Block List* box and click *Start*.

SYSCON will upload the *Blocks* for the selected *Device*.

d) Parameter Upload

On the *Fieldbus* window, click on the *Block* icon and select *Upload* from the popup menu. On the *Upload* dialog box, select only the *Parameters* box and click *Start*.

SYSCON will upload the *Parameters* for the selected *Block*.

4.2.6 Live List

The user can view the list of *Devices* instantiated in a *Fieldbus* through the *Live List*, after the communication is initialized.

In the *Fieldbus* window, click on the *Fieldbus* icon, go to the *View* menu and click the item *Live List*. Or right-click on the *Fieldbus* icon to activate its popup menu and select the item *Live List*. See the following figures:

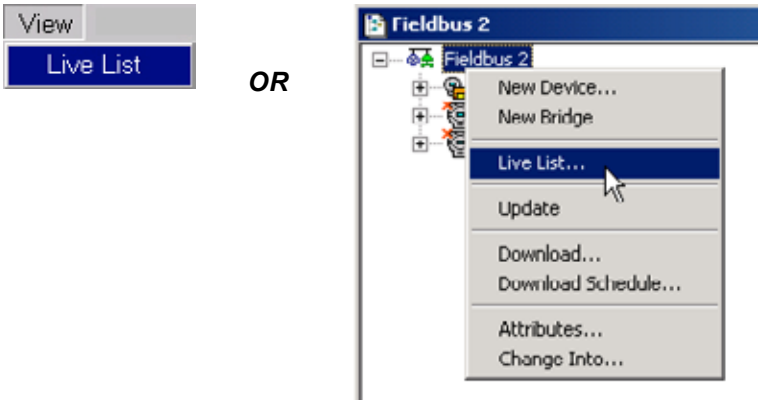


Figure 4.13. View Menu & Popup Menu: Live List

The *Live List* window will open:

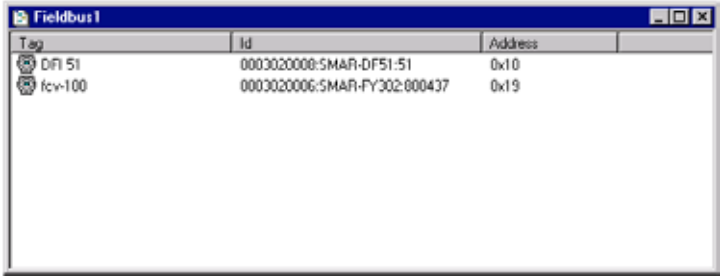


Figure 4.14. Live List Window

Live List Menu Options

a) Assign Tag

Right-click on the *Device* icon to activate its popup menu and select the item *Assign Tag*.

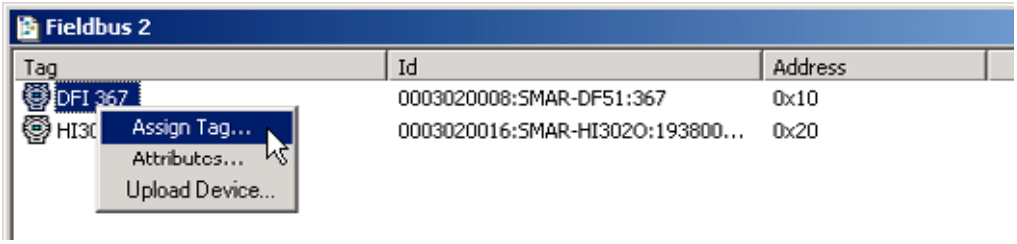


Figure 4.15. Live List Menu: Assign Tag

The *Assign Tag* dialog box will open. Type the new tag and click *Ok*:

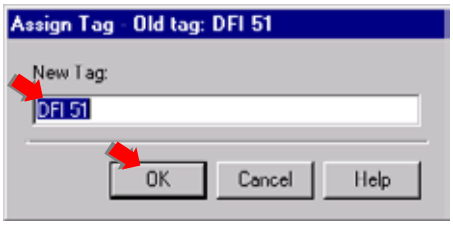


Figure 4.16. Assign Tag Dialog Box

b) Attributes

Right-click on the *Device* icon to activate its popup menu and select the item *Attributes*.

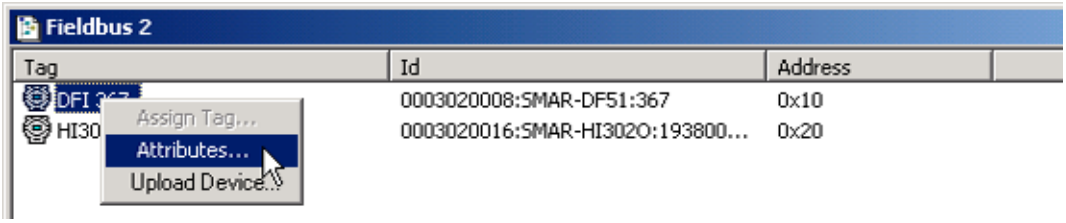


Figure 4.17. Live List Menu: Attributes

The *Device Attributes* dialog box will open.

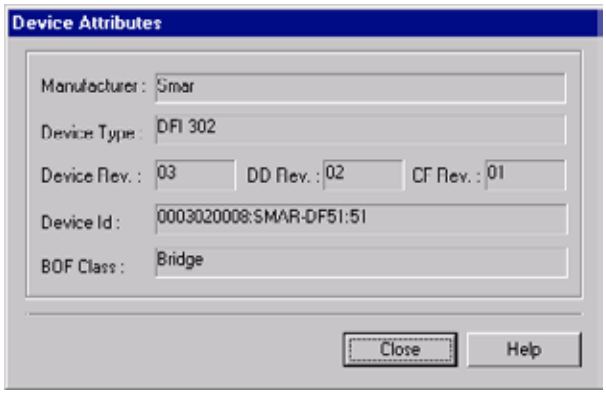


Figure 4.18. Device Attributes Dialog Box

c) Upload Device

Right-click on the *Device* icon to activate its popup menu and select the item *Upload Device*.

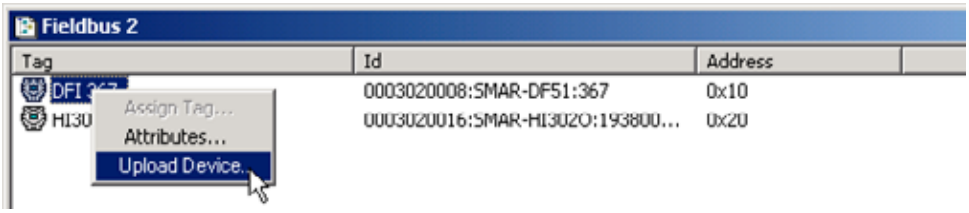


Figure 4.19. Live List Menu: Upload Device

The following dialog box will open while the *Device* is being uploaded.

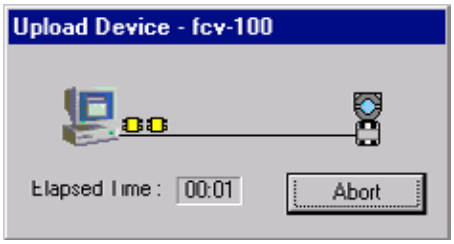


Figure 4.20. Uploading Device

4.2.7 Block List

The user can view the list of *Blocks* instantiated in a *Device* through the *Block List*, after the communication is initialized.

In the *Fieldbus* window, click on the *FB* icon, go to the *View* menu and click the item *Block List*. Or right-click on the *FB* icon to activate its popup menu and select the item *Block List*. See the following figures:

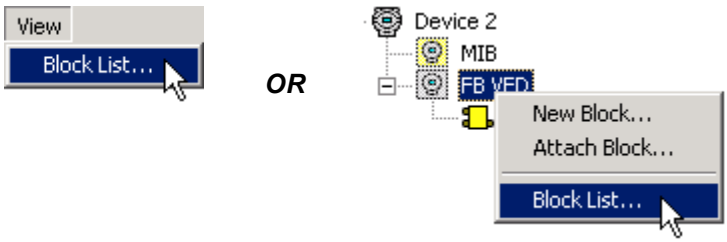


Figure 4.21. View Menu & Popup Menu: Block List

The *Block List* window will open:

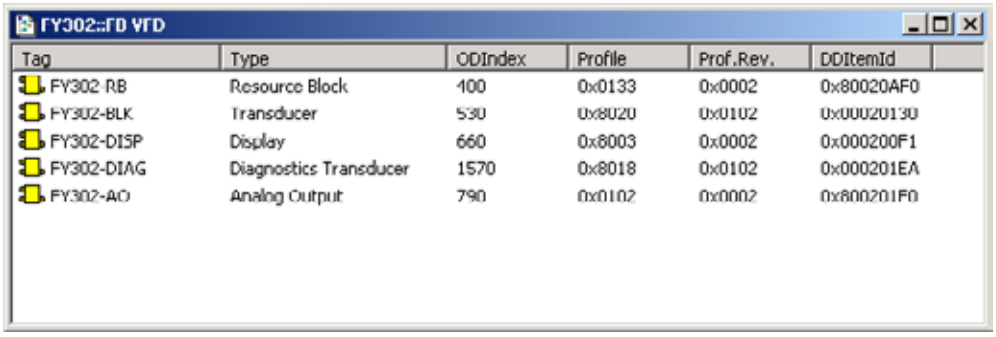


Figure 4.22. Block List Window

Block List Menu Options

a) Assign Tag

Right-click on the *Block* icon to activate its popup menu and select the item *Assign Tag*.

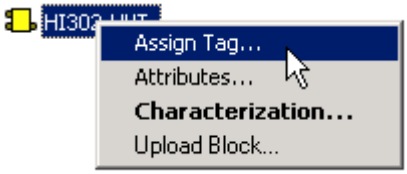


Figure 4.23. Block List Menu: Assign Tag

The *Assign Tag* dialog box will open. Type the new tag and click *Ok*:

Figure 4.24. Assign Tag Dialog Box

b) Attributes

Right-click on the *Block* icon to activate its popup menu and select the item *Attributes*.

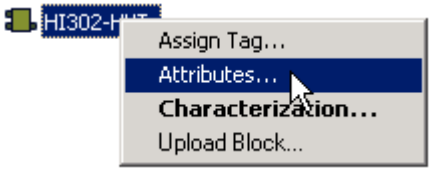


Figure 4.25. Block List Menu: Attributes

The *Block Attributes* dialog box will open.

c) Characterization

Right-click on the *Block* icon to activate its popup menu and select the item *Characterization*.

Figure 4.26. Block List Menu: Characterization

The *Block Characterization* dialog box will open:

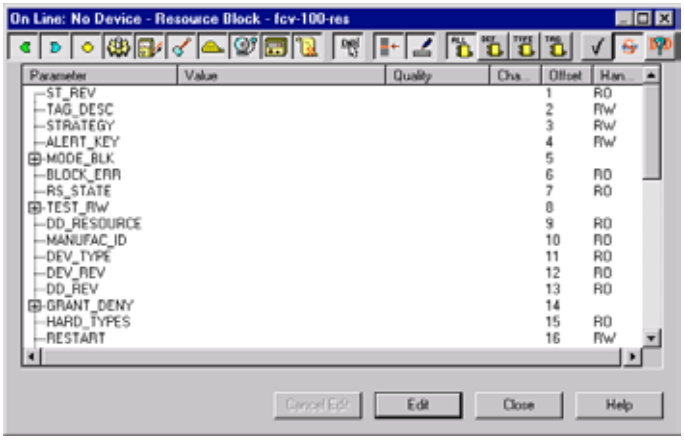


Figure 4.27. Characterization Window

See the section *Block On Line Characterization* for further information.

d) Upload Block

Right-click on the *Block* icon to activate its popup menu and select the item *Upload Block*.

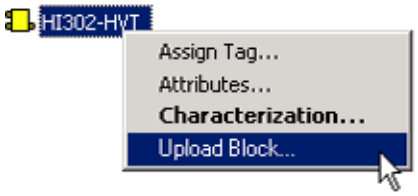


Figure 4.28. Block List Menu: Upload Block

The *Block* will be created in the corresponding *Device*.

4.2.8 Exporting Tags

To enable the on-line communication with the *Parameters* of the *Function Blocks*, the user will have to generate a file containing all tags (*Devices* and *Function Blocks*) present in the configuration.

On the *Project* window, click on the *Project* icon, go to the *Export* menu and click *Tags*. Or activate the popup menu by right-clicking on the *Project* icon. Click the item *Export Tags*.

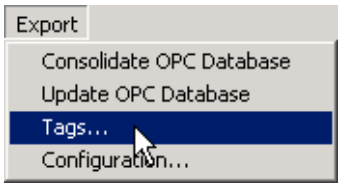


Figure 4.29. Export Menu: Export Tags

The *Save Tag Info* dialog box will open. Select the **Taginfo.ini** file and click *Save*.

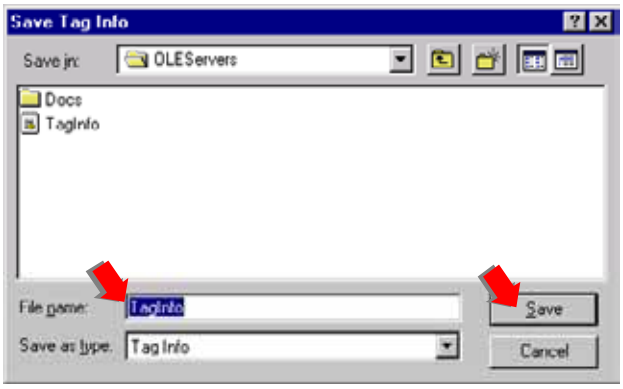


Figure 4.30. Save Tag Info Dialog Box

NOTE

Every time any tag is changed in the configuration, it is necessary to repeat the *Export Tag* procedure. Otherwise, the supervision of the new tag will not be allowed.

To automatically update the **Taginfo.ini** file, click on the *Project* icon, go to the *Export* menu and click *Update OPC Database*. Or activate the popup menu, right-clicking on the *Project* icon. Click the item *Update OPC Database*.

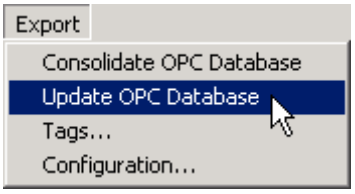


Figure 4.31. Export Menu: Update OPC Database

The file promptly will be updated.

NOTE

If there are two or more configuration files, the tag lists from these sources must be consolidated in a single list, so the OPC Server can use the entire list of tags to provide the information requested by any OPC client application.

The user must assure that the tags used in all of the configuration files are unique. If there are duplicated tags, only one tag will be exported to the **Taginfo.ini** file.

When the user exports the tags or updates the OPC database of a configuration that has a consolidated tag list, the consolidated list will be updated with the tag list corresponding to the configuration current open.

4.2.9 Exporting the Configuration

The user can export the project configuration to an existing database.

On the *Project* window, click the *Project* icon. Go to the *Export* menu and click *Configuration*. Or activate the popup menu, by right-clicking the project icon. Click the item *Export Configuration*.

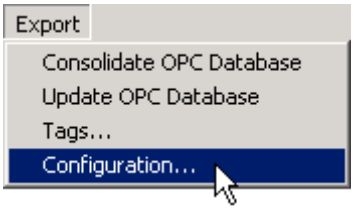


Figure 4.32. Export Menu: Export Configuration

The *Select Data Source* dialog box will open.

On the *File Data Source* tab, select the source that describes the driver that is to be connected. The user can use any file data source that refers to an ODBC driver, which is installed on the machine.

Double-click the data source icon to select the driver. See the following figure:

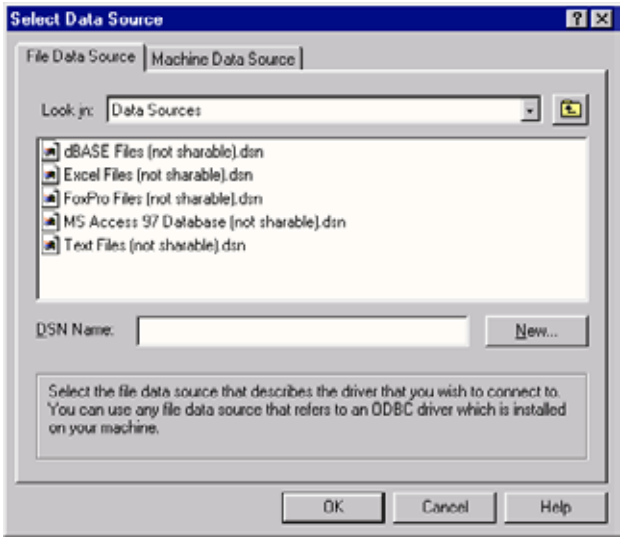

Select Data Source
File Data Source
Machine Data Source
Look in:
Data Sources
dBASE Files (not sharable).dsn
Excel Files (not sharable).dsn
FoxPro Files (not sharable).dsn
MS Access 97 Database (not sharable).dsn
Text Files (not sharable).dsn
DSN Name:
New...
Select the file data source that describes the driver that you wish to connect to. You can use any file data source that refers to an ODBC driver which is installed on your machine.
OK
Cancel
Help

Figure 4.33. Select Data Source Dialog Box

Or the user can also use the *Machine Data Source* tab.

The *Machine Data Source* is specific to the machine, and cannot be shared. According to the *Type* column: "User" data sources are specific to a user on the machine; "System" data sources can be used by all users on the machine, or by a system-wide service.

Double-click the data source name to select the machine. See the following figure:

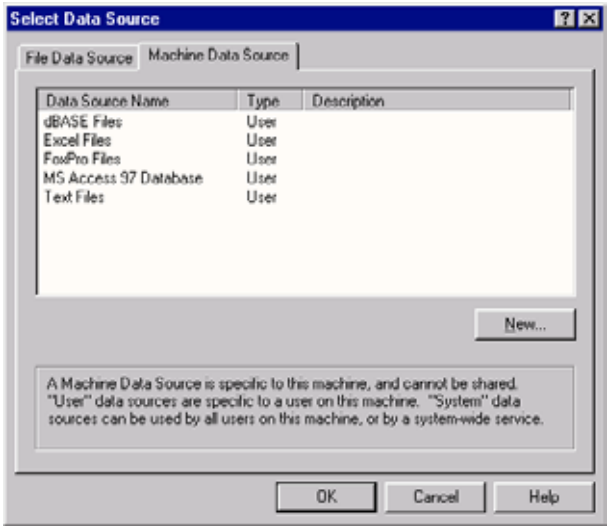

Select Data Source
File Data Source
Machine Data Source
Data Source Name
Type
Description
dBASE Files
Excel Files
FoxPro Files
MS Access 97 Database
Text Files
User
New...
A Machine Data Source is specific to this machine, and cannot be shared.
"User" data sources are specific to a user on this machine. "System" data sources can be used by all users on this machine, or by a system-wide service.
OK
Cancel
Help

Figure 4.34. Select Data Source Dialog Box

The *Select Workbook* dialog box will appear:

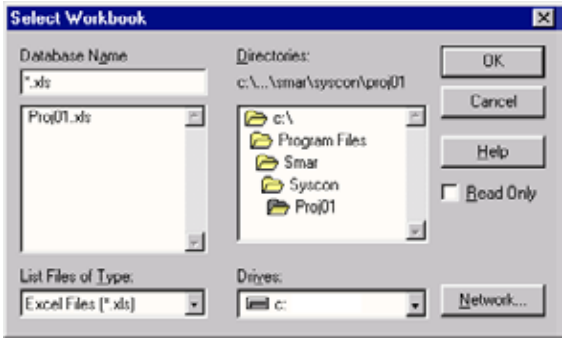


Figure 4.35. Select Workbook Dialog Box

Select the folder where the data file is and double-click the workbook icon.

The project configuration will be saved to the workbook file.

4.2.10 Consolidating the OPC Database

If the user is working with two or more configuration files, the tag lists from these source files must be consolidated in a single list.

On the *Project* window, click on the *Project* icon, go to the *Export* menu and click *Consolidate OPC Database*. Or activate the popup menu right-clicking on the *Project* icon. Click the item *Consolidate OPC Database*.

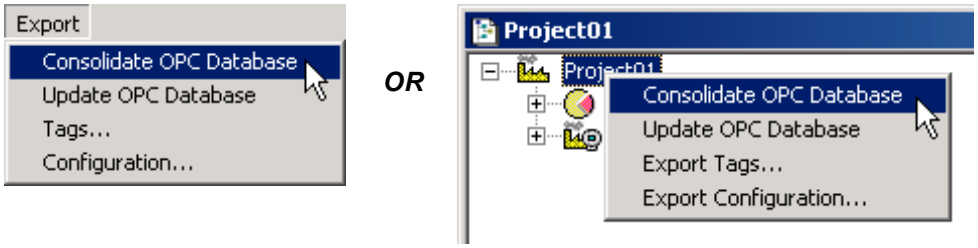


Figure 4.36. Export Menu & Popup Menu: Consolidate OPC Database

The *Consolidate OPC Database* dialog box will open.

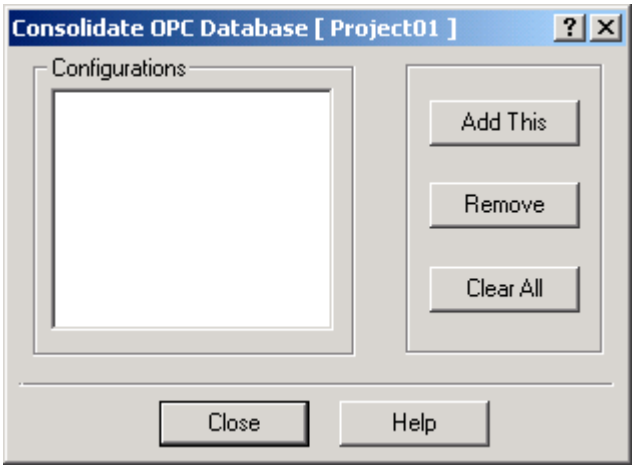


Figure 4.37. Consolidate OPC Database dialog box

Adding a Configuration

To add the current configuration to the consolidate list, click *Add This*. A dialog box will open to confirm the operation. Click *Yes* to include the tag list of the current configuration to the tag list of the OPC Server. The name of the configuration will be added to the list of configurations.

To add another configuration to the list, it is necessary to open the configuration in the SYSCON application and repeat this procedure.

Removing a Configuration

To remove a configuration from the consolidate list, select the name of the configuration in the *Configurations* list and click *Remove*. A dialog box will open to confirm the operation. Click *Yes* to remove the selected configuration from the tag list of the OPC Server. The name of the configuration will be removed from the list of configurations.

Updating a Configuration

If the tag list of a configuration that has been consolidated changes, it will be necessary to update the tag list of the OPC Server.

Open the configuration file that had the tag list updated. Right-click the *Project* icon and select the item *Consolidate OPC Database* to open the dialog box.

Click the button *Update This*. A dialog box will open to confirm the operation. Click *Yes* to update the tag list in the OPC Server.

NOTE
This procedure has the same functionality of the *Export Tags* and *Update OPC Database* options, in the *Export* menu.

Clearing the Consolidated List

To reset the list of consolidated configurations and remove all of the tag lists from the OPC Server, open any configuration file in the SYSCON application. Right-click the *Project* icon and select the item *Consolidate OPC Database* to open the dialog box.

The list of configurations that have been consolidated will be displayed.

Click the button *Clear All*. A dialog box will open to confirm the operation. Click *Yes* to reset the consolidated tag list of the OPC Server.

5 Search Menu

The user can search for *Devices* and *Blocks* on the project configuration.

Go to the *Search* menu and click *Find*. See the following figure:

Figure 5.1. Search Menu: Find

The *Find Tags* dialog box will open:

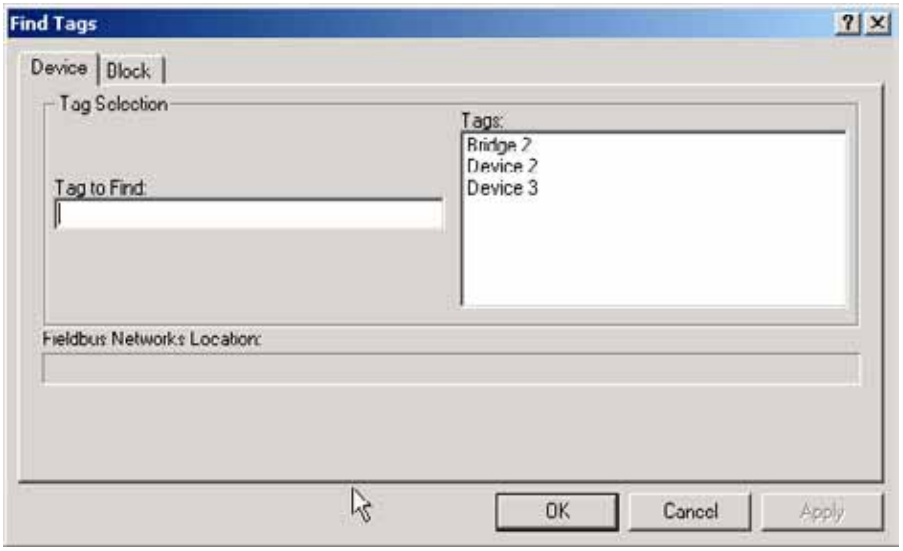


Figure 5.2. Find Tags Dialog Box

To search for a *Device*, click the *Device* tab, and type its tag on the *Tag to Find* text box, or select the tag on the *Tags* box. The *Device*'s location will be shown on the *Fieldbus Networks Location* box.

See the following example:

1. Type the tag of the *Device*.
2. The *Fieldbus Networks* location will be indicated.

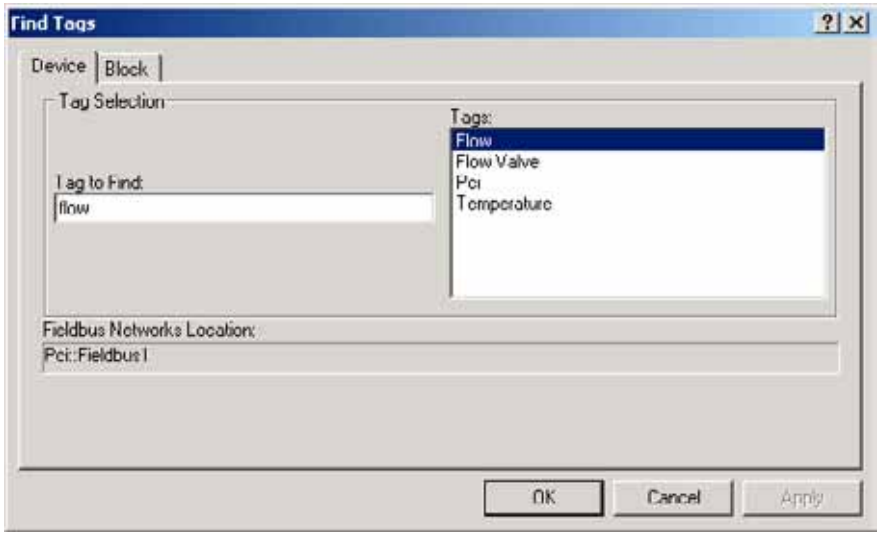


Figure 5.3. Searching for Devices

3. Click *Ok* to open the *Fieldbus* window and localize the *Device*.

To search for a *Block*, click the *Block* tab, and type its tag on the *Tag to Find* text box, or select the tag on the *Tags* box. The *Block*'s location will be shown on the *Fieldbus Networks Location* box. The *Physical Location* box shows to which *Process Cell* and *Control Module* the *Block* is attached. See the following example:

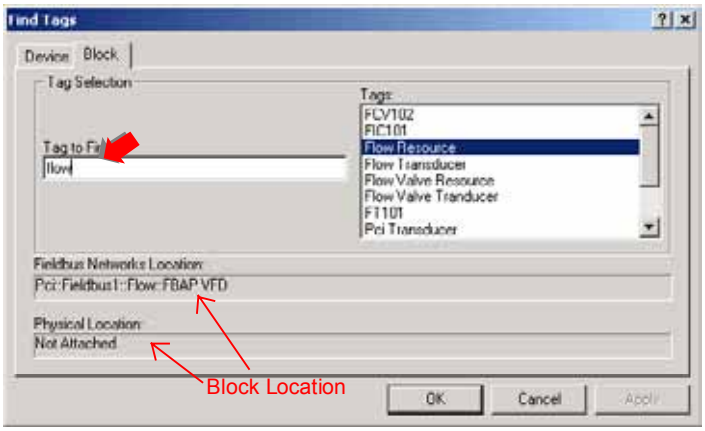


Figure 5.4. Searching for Blocks

Click *Ok* to open the *Fieldbus* window and localize the *Block*.

6 Properties

6.1 Drawing Properties

This section presents a brief explanation about the drawing properties. For example, the user can change the number of pixels that represents a logical measure unit, the background and the grid colors, or can choose a background image to be placed at the drawing area at the *Strategy* window.

To change the drawing properties go to the *Options* menu and click *Drawing Properties*. Or activate the popup menu, right-clicking on the drawing area on the *Strategy* window. Click the item *Drawing Properties*.

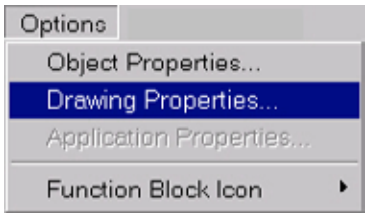


Figure 6.1. Options Menu: Drawing Properties

The *Drawing Properties* dialog box will open:

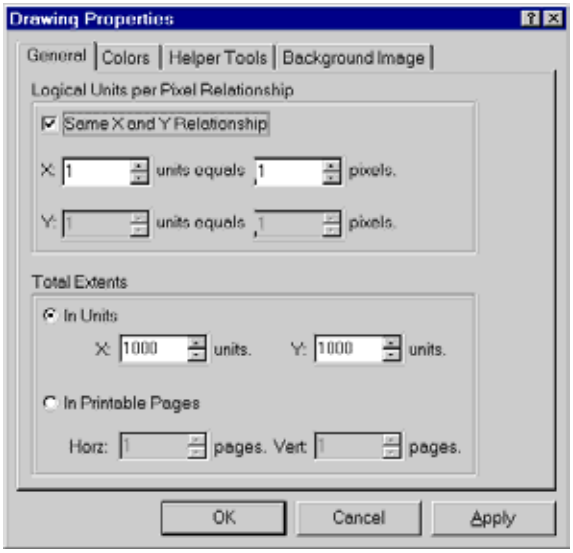


Figure 6.2. Drawing Properties Dialog Box

The *Apply* button is used to apply the changes to the object, so the user can have a preview of how the changes affected it.

Click *Ok*, the changes will be made and the dialog box will be closed.

If the user clicks *Cancel* before clicking the *Apply* button, the changes will be lost.

In each tab, different properties can be changed. They are explained in the following sections.

General Tab

At the *General* tab, the user can change the drawing visualization and the total extents of the drawing.

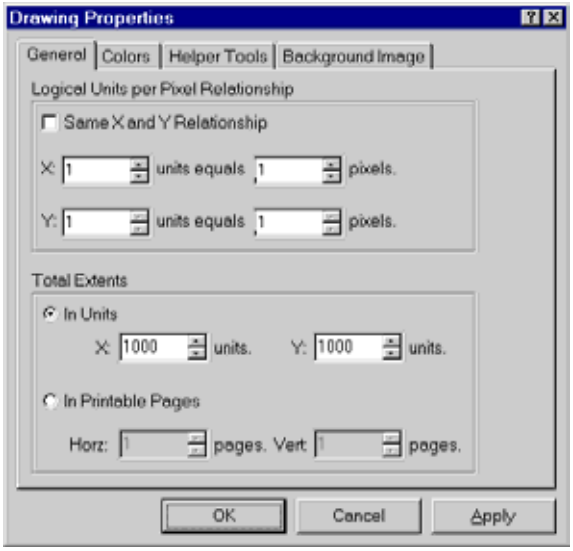


Figure 6.3. Drawing Properties Dialog Box: General Tab

The *Logical Units per Pixel Relationship* rectangle defines:

- How many X units will correspond to a determined number of pixels, increasing or decreasing the numbers at the *X* boxes. This will increase the width view.
- How many Y units will correspond to a determined number of pixels, increasing or decreasing the numbers at the *Y* boxes. This will increase the height view.

Selecting the *Same X and Y Relationship* box, any change done to the X variable, concerning the number of pixels that will represent a logical measure unit, will also be done automatically to the Y variable. This will maintain the correct proportion.

At the *Total Extents* rectangle choose to represent the drawing:

- In Units: the user will be working in a determined area independently from the paper size, except when printing the drawing. In this case, the software will make a correspondence, independent of the number of pages it will take. Increase or decrease the number of horizontal and vertical units, typing or selecting a number at the *X* and *Y* boxes.
- In Printable Pages: the drawing will be presented in a page format, according to the Print Setup definitions and pre-defined Units size. Define how many side-by-side pages there will be at the *Horz* box, and how many pages, one after the other vertically, there will be at the *Vert* box.

Colors Tab

At the *Colors* tab, the user can change the background and the grid colors of the drawing area.

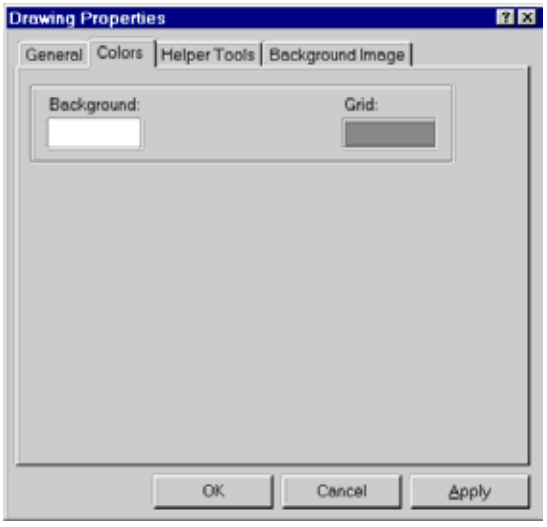


Figure 6.4. Drawing Properties Dialog Box: Colors Tab

At the *Background* rectangle, click the filled rectangle to select the background color. The *Color* box will open. Click the color at the palette and click *OK*.

At the *Grid* rectangle, click the filled rectangle to select the grid color. The *Color* box will open. Click the color at the palette and click *OK*.

Helper Tools Tab

At the *Helper Tools* tab, the user can enable or disable gridlines, change the spacing between gridlines and type the zoom factor for the drawing view.

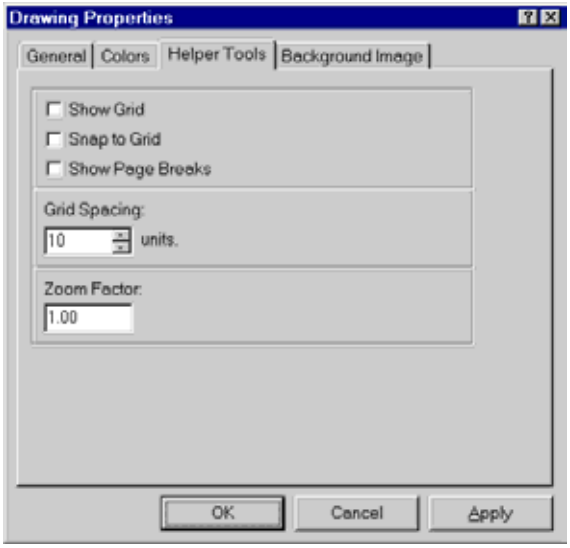


Figure 6.5. Drawing Properties Dialog Box: Helper Tools Tab

At the first rectangle, select any of the three boxes:

- *Show Grid*: select this box to show the grid points at the *Strategy* window drawing area.
- *Snap to Grid*: select this box to make the objects snap to the grid.
- *Show Page Breaks*: select this box to view horizontal and vertical page breaks according to the number of horizontal and vertical pages determined when using the option *In Printable Pages* at the *General* Tab.

At the *Grid Spacing* rectangle define the space between gridlines, increasing or decreasing the number of units at the *Units* box.

At the *Zoom Factor* rectangle define the zoom factor, typing the number that will determine how many times the drawing view will be increased or decreased.

Background Image Tab

At the *Background Image* tab, the user can choose any bitmap to be placed on the drawing background, defining its position or stretching it to the window size.

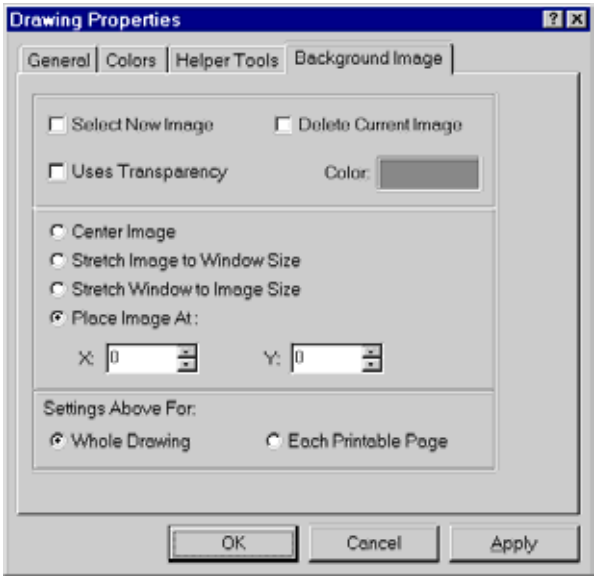


Figure 6.6. Drawing Properties Dialog Box: Background Image Tab

At the first rectangle, check the *Select New Image* box to choose a bitmap.

The *Open* dialog box will open:

1. In the *Look in* box, select the folder that contains the bitmap file to be added.
2. Click on the bitmap file icon or type its name in the *File name* box.
3. Click *Open* to conclude this task.

See the following figure:

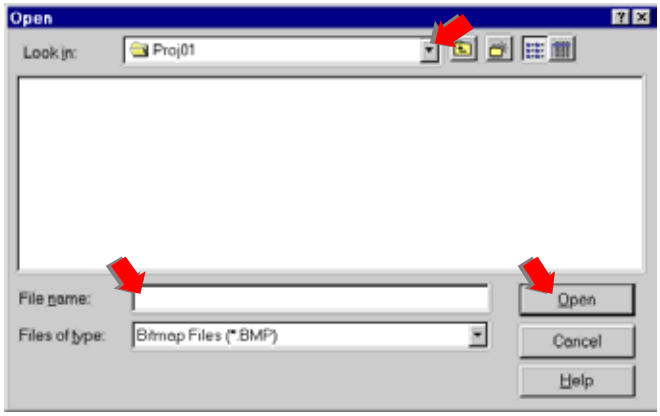


Figure 6.7. Open Image Dialog Box

Check the *Delete Current Image* box to delete the bitmap currently used on the drawing.

Check the *Uses Transparency* box to make one color of the bitmap transparent. Click the *Color* rectangle to open the palette and select a color.

At the second rectangle, the user defines the view properties, such as placing image at a determined position, or stretching it to the window size.

Select one of the options:

- *Center Image*: places the bitmap at the center of the drawing area.
- *Stretch Image to Window Size*: stretches the bitmap until it fits to the window size.
- *Stretch Window to Image Size*: stretches the document window until it fits the bitmap.
- *Place Image At*: defines a position for the bitmap inside the drawing area. To define the horizontal position, type or select a value at the *X:* box. To define the vertical position, type or select a value at the *Y:* box.

At the *Settings Above For:* rectangle, the user can apply the bitmap position to the whole drawing area, checking the *Whole Drawing* box, or to each printable page, checking the *Each Printable Page* box.

6.2 Object Properties

This section presents a brief explanation about the object properties. For example, the user can change the position, the size, the line color, the fill color and the text attributes of a *Block* drawn at the *Strategy* window.

To change the properties of an object, select the object at the *Strategy* window, go to the *Options* menu and click *Object Properties*. Or activate the object menu, by right-clicking on it. Click the item *Properties*.

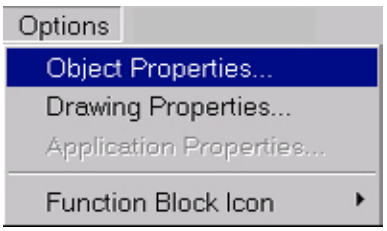


Figure 6.8. Options Menu & Popup Menu: Object Properties

The *Object Properties* dialog box will open:

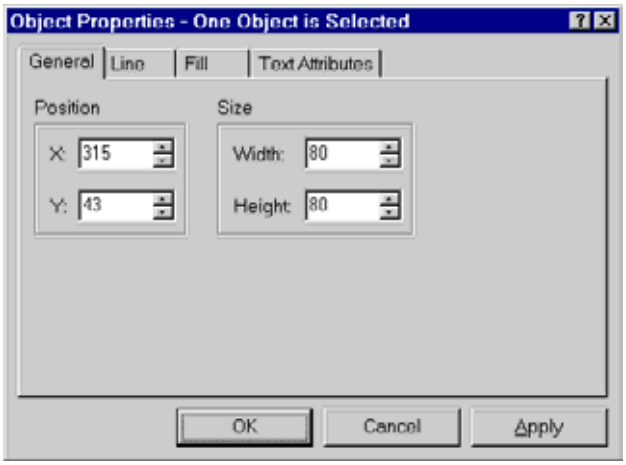


Figure 6.9. Object Properties Dialog Box

The *Apply* button will be used to apply the changes to the object, so the user can have a preview of how the changes affected it.

Click *Ok*, the changes will be made and the dialog box will be closed.

If the user clicks *Cancel* before clicking the *Apply* button, the changes will be lost.

The *Line*, *Fill* and *Text Attributes* tabs have three additional buttons:

- *Inherit*: this button turns back the default configuration.
- *Revert*: this button turns back the anterior configuration.
- *Set As Default*: this button makes the current configuration the default.

Those buttons will be available when changing at least one object attribute.

In each tab, different properties can be changed. They are explained in the following sections.

General Tab

At the *General* tab, the user can precisely change the position and the size of the selected object. The *Status* bar, at the bottom of the SYSCON window, displays information about the location of the cursor, while moving the cursor on the *Strategy* window.

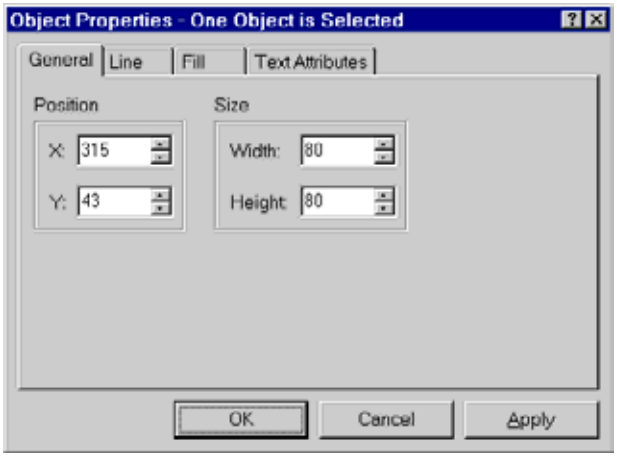


Figure 6.10. Object Properties Dialog Box: General Tab

At the *Position* rectangle define:

- The horizontal position of the object, typing or selecting a number at the *X* box.
- The vertical position of the object, typing or selecting a number at the *Y* box.

At the *Size* rectangle define:

- The width of the object, typing or selecting a number of horizontal units at the *Width* box. (The minimum width is 75 units)
- The height of the object, typing or selecting a number of vertical units at the *Height* box. (The minimum height is 44 units)

Line Tab

At the *Line* tab, the user can change all line attributes of the selected object.

Figure 6.11. Object Properties Dialog Box: Line Tab

At the *Thickness* rectangle, the user can define the line thickness, typing or selecting a number. See the following examples of line thickness:

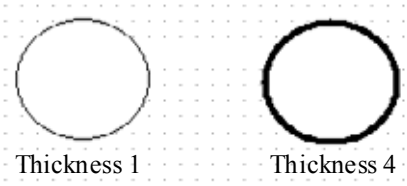


Figure 6.12. Line Thickness Examples

At the *Style* rectangle, click the down arrow to select the line style. Choose a dashed line, a doted line, a dashed-dot line, a dashed-dot-dot line, or a solid line, which is the SYSCON default. See the following examples of line styles:

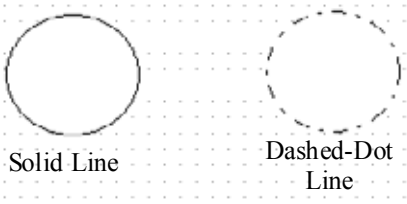


Figure 6.13. Line Style Examples

At the *Color* rectangle, click the filled rectangle to select the line color. The *Color* box will open. Click the color at the palette then click *OK*. See the following examples of line colors:

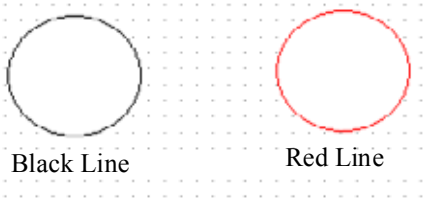


Figure 6.14. Line Color Examples

Fill Tab

At the *Fill* tab, the user can change all fill attributes of the selected object.

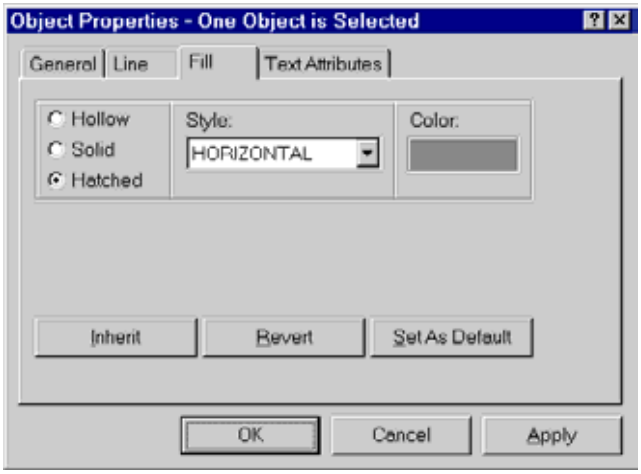


Figure 6.15. Object Properties Dialog Box: Fill Tab

Select one of the fill effects: *Hollow*, *Solid* or *Hatched*.

The *Style* rectangle will be available when selecting the *Hatched* fill style. Choose a horizontal, a vertical, a f diagonal, a d diagonal, a cross, or a diagonal cross hatch. See the following examples of line styles:

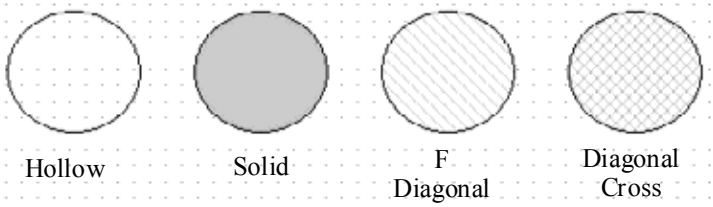


Figure 6.16. Fill Effects Examples

The *Color* rectangle will be available for the *Solid* and *Hatched* fill style. Click the filled rectangle. The *Color* box will open. Click the color at the palette then click *OK*. See the following examples of fill colors:

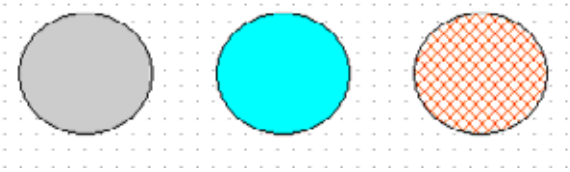


Figure 6.17. Fill Color Examples

Text Attributes Tab

At the *Text Attributes* tab, the user can change the text attributes of the selected object.

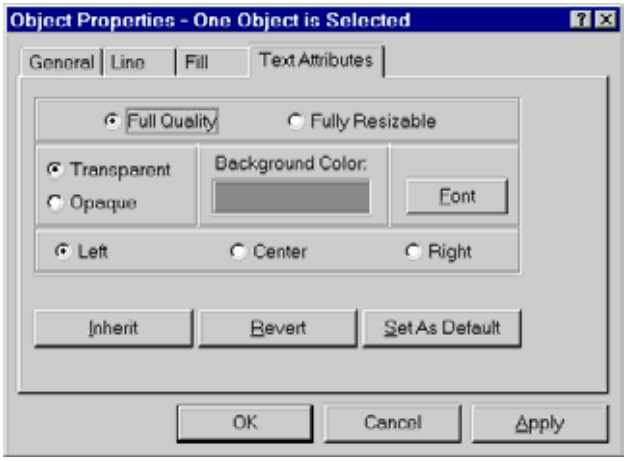


Figure 6.18. Object Properties Dialog Box: Text Attributes Tab

Select one of these options:

- *Full Quality*: this option limits the text to work with Windows restricted attributes. The user won't be able to treat the text as if it were an object, resizing it any way or even changing its line or fill attributes.
- *Fully Resizable*: this option allows the user to modify any text attribute as if it were an object.

Choose the background style for the text:

- *Transparent*: set a transparent background for the text.
- *Opaque*: set a filled background for the text.

The *Background Color* rectangle is available for the *Opaque* option. Click the color rectangle and the *Color* box will open. Choose the color and click *Ok*. See the following example:

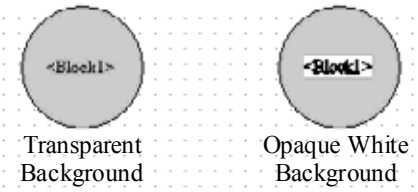


Figure 6.19. Background Style Examples

The *Font* button opens the *Font* dialog box. The user can change the type, style, and size of the text.

Choose the alignment of the text: click *Left* to align the text left; or click *Center* to align the text at the center; or click *Right* to align the text right.

7 Toolbars

To activate a toolbar, go to the *Tool* menu and point to the item *Tool Boxes*. Click one of the toolbars shown on the list. A check mark appears next to the toolbar when it has been opened.

The toolbars are placed at the left side of the SYSCON window. The user can drag the toolbar to any location in the window.

The user can select the tools through the *Tools* menu and its submenus. When pointing the cursor on a submenu, a list of items will open, and the items have the same functionality as the toolbar buttons. The check will show the selected tool.

7.1 Strategy Toolbar

The *Strategy* toolbar will activate with the *Strategy* window. In case it's not activated, go to the *Tools* menu, item *Tool Boxes*, and the option *Strategy* should be checked.

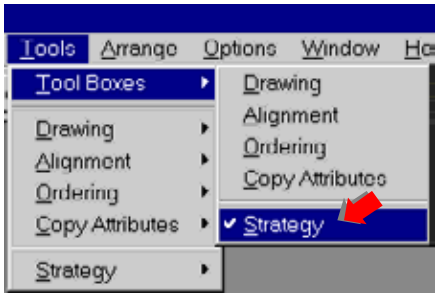


Figure 7.1. Tools Menu: Strategy Toolbar

The *Strategy* toolbar will open:

Figure 7.2. Strategy Toolbar

This toolbar has tools to create and manipulate new *Blocks*, *Links* and *Templates*.

- *Select* Button

Click this button to activate the *Select* tool. With this button clicked, it is possible to select any object(s) at the *Strategy* window for further operations, like moving, resizing etc.

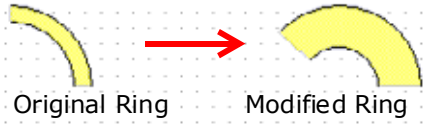
To select only one object at the *Strategy* window, click the *Select* button, , then click the object.

With the *Select* button activated, the user has two options to select more than one object at the *Strategy* window. The first one is to press and hold down the *Shift* key, on the keyboard, while clicking each object to be selected.

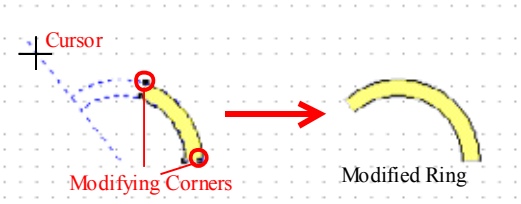
The second one is to click anywhere in the blank area of the *Strategy* window. While dragging the cursor, a box appears around the objects to be selected.

- *Strategy Modify* Button

Click this button to activate the *Modify* tool. This tool is used to change an object's shape, as seen below:

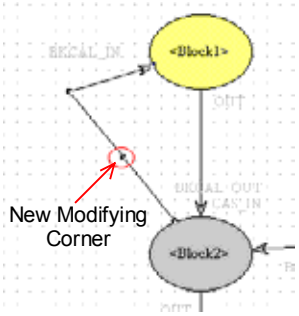


To use this tool, first select the object. After clicking the *Modify* button, click any *Modify* corner then, drag the cursor to obtain the new figure. See the following illustration:



Use this tool to redraw a *Link*. Use the *Select* Button, , on the *Strategy* toolbar, to select a *Link*. The *Modifying* corners will appear.

Click the *Link* line to create a *Modifying* corner. Or right-click a *Modifying* corner to remove it from the *Link* line.



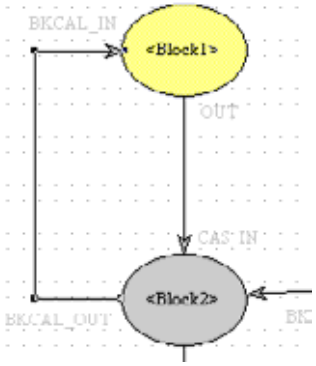
Click one corner and drag it onto the drawing area to redraw the *Link*.

If the current corner is set as the reference point, hold down the *Ctrl* key while dragging the corner to draw it at the same horizontal direction or at the same vertical direction. Or hold down the *Shift* key while dragging the corner to draw it at a diagonal direction.

If the previous corner is set as the reference point, hold down the *Ctrl* key while dragging the corner to draw a horizontal or vertical line from the previous corner. Or hold down the *Shift* key while dragging the corner to draw a diagonal line from the previous corner.

If the first corner is set as the reference point, hold down the *Ctrl* key while dragging the corner to draw a horizontal or vertical line from the next corner. Hold down the *Shift* key while dragging the first corner to draw a diagonal line from the next corner.

See in the following figure the new *Link*:



Also, use this button to modify a *Parameter* label, a *Link* label or a *Block* label.

Click the *Modify* button then click on the label to be changed. Type the new label then click the drawing area, or click another label to be changed.

When a *Block* label changes, the *Block* tag will automatically be updated in the *Process Cell* window and in the *Fieldbus* window. The *Parameter* label does not change in these windows.

- *Function Block* Button

Click this button to create new *Function Blocks*. Just click the drawing area with this button selected and the *New Block* dialog box will open. Choose the *Block* attributes and it will automatically draw after clicking the *Ok* button.

See the section *Creating New Blocks at the Strategy Window* for further information.

- *Link* Button

Click this button to create *Links* between the *Function Blocks*. Click one of the *Blocks*, choose the *Output Parameter* then, click another *Block*, choosing the *Input Parameter*.

See the section *Creating a Link* for further information.

- *Import Strategy Template* Button

Click this button to add a *Template* to the *Strategy* window. When clicking this button, the *Open* dialog box will appear. Select the file that contains the *Template* and click *Open*. The *Template* will automatically be added to the *Strategy* window.

See the section *Using Templates* for further information.

- *Export Selected Strategy as Template* Button

Click this button to create a *Template* file. Select the *Blocks* and *Links* that will be part of the *Template*, and select this button. The *Save* dialog box will open. Type a name for the *Template* file and click *Save*.

See the section *Using Templates* for further information.

- *Forward Path Definition* Button

Allows defining the forward path definition of a given control strategy. Toggles the state of a given link.

- *On Line Monitoring* Button

Click this button to put control strategy into the online mode.

7.2 Drawing Toolbar

To activate the *Drawing* toolbar, go to the *Tools* menu, item *Tool Boxes*, and check the option *Drawing*.

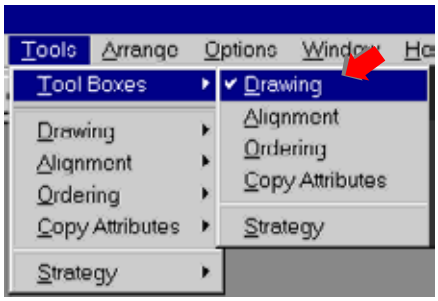


Figure 7.3. Tools Menu: Drawing Toolbar

The *Drawing* toolbar will open:

Figure 7.4. Drawing Toolbar

This toolbar has tools to draw, manipulate, and format drawing objects.

- *Select* Button

See the item *Select Button* at the *Strategy* toolbar section.

- *Drawing Modify* Button

See the item *Strategy Modify Button* at the *Strategy* toolbar section.

- *Rectangle* Button

Click this button to activate the *Rectangle* tool. To draw a rectangle, click the drawing area and drag the cursor diagonally in the direction desired, to obtain the desired figure. To draw a square, press and hold down the *Shift* key while dragging the cursor. See the figure:

- *Rounded Rectangle* Button

Click this button to activate the *Rounded Rectangle* tool. To draw a rounded-corned rectangle, click the drawing area and drag the cursor diagonally in the desired direction, to obtain the desired figure. To draw a rounded-corned square, press and hold down the *Shift* key while dragging the cursor. See the figure:

- *Ellipse* Button

Click this button to activate the *Ellipse* tool. To draw an ellipse, click the drawing area and drag the cursor diagonally, to obtain the desired figure. To draw a perfect circle, press and hold down the *Shift* key while dragging the cursor. See the figure:

- *Arc* Button

Click this button to activate the *Arc* tool. To draw an arc, click the drawing area and drag the cursor to obtain the desired figure. To draw an arc that has its height equal to its width, press and hold down the *Shift* key while dragging the cursor. See the figure:

- *Pie* Button

Click this button to activate the *Pie* tool. To draw a pie, click the drawing area and drag the cursor to obtain the desired figure. To draw a pie that has its height equal to its width, press and hold down the *Shift* key while dragging the cursor. See the figure:

- *Chord* Button

Click this button to activate the *Chord* tool. To draw a chord, click the drawing area and drag the cursor to obtain the desired figure. To draw a chord that has its height equal to its width, press and hold down the *Shift* key while dragging the cursor. See the figure:

- *Ring* Button

Click this button to activate the *Ring* tool. To draw a ring, click the drawing area and drag the cursor to obtain the desired figure. To draw a ring that has its height equal to its width, press and hold down the *Shift* key while dragging the cursor. See the figure:

- *Line* Button

Click this button to activate the *Line* tool. To draw a line, click the drawing area and drag the cursor to obtain the desired figure. To draw a perfectly horizontal or vertical line, press and hold down the *Ctrl* key while dragging the cursor. To draw a perfectly 45-degree diagonal line, press and hold down the *Shift* key while dragging the cursor. See the figure:

- *Pipe* Button

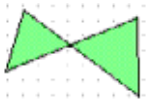
Click this button to activate the *Pipe* tool. To draw a pipe, click the drawing area and drag the cursor to obtain the desired figure. To draw a perfectly horizontal or vertical pipe, press and hold down the *Ctrl* key while dragging the cursor. To draw a perfectly 45-degree diagonal pipe, press and hold down the *Shift* key while dragging the cursor. See the figure:

- *Polyline* Button

Click this button to activate the *Polyline* tool. To draw a polyline, drag the cursor and click at each corner to draw the lines. To draw a perfectly horizontal or vertical line, press and hold down the *Ctrl* key while dragging the cursor. To draw a perfectly 45-degree diagonal line, press and hold down the *Shift* key while dragging the cursor. To end a shape, right-click at any point. See the figure:

- *Polygon* Button

Click this button to activate the *Polygon* tool. To draw a polygon, drag the cursor and click at each corner of the polygon. To draw a perfectly horizontal or vertical line, press and hold the *Ctrl* key down while dragging the cursor. To draw a perfectly 45-degree diagonal line, press and hold down the *Shift* key while dragging the cursor. To end a shape, right-click at any point. See the figure:



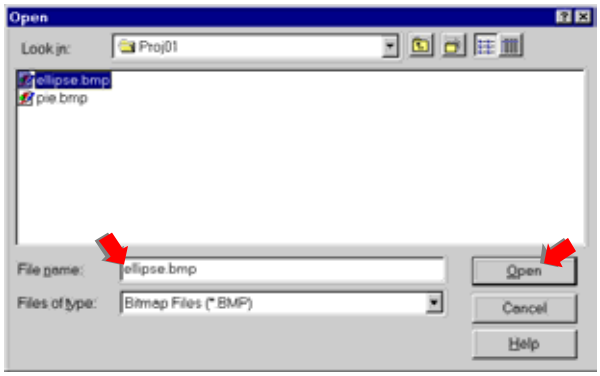
- *Text* Button

Click this button to activate the *Text* tool. To type any text at the *Strategy* window, click at the drawing area and the cursor will change to a prompt. Type the text and click at the drawing area.

- *Bitmap* Button

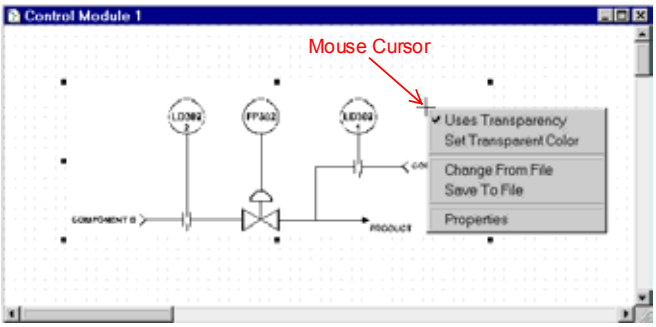
Click this button to import a bitmap file to the *Strategy* window. When clicking the drawing area with this button selected, the *Open* dialog box will appear. Select the bitmap file, clicking its icon or typing its name in the *File name* box, and click *Open*.

Observe the following figure:



The bitmap will be added to the *Strategy* window and it has its own properties: right-click to activate its popup menu.

See the following figure:



Check the item *Uses Transparency* to turn one color at the bitmap transparent.

Click the item *Set Transparent Color* to choose one color that will be transparent in the bitmap.

The item *Change From File* allows the user to select another bitmap to replace the current one. When clicking this item, the *Open* dialog box will appear. Select the folder that contains the new bitmap file, in the *Look in* box; click the file icon or type its name in the *File name* box and click *Open*. If the bitmap is not to be replaced, click *Cancel*.

The item *Save To File* allows the user to save the bitmap as a *.bmp* file. When clicking this item, the *Save As* dialog box will appear. Choose the folder where the bitmap file will be saved, in the *Look in* box; type the file name in the *File name* box and click *Save*. If the bitmap is not to be saved, click *Cancel*.

The item *Properties* will open the *Object Properties* dialog box. See the section *Object Properties* for further information.

7.3 Alignment Toolbar

To activate the *Alignment* toolbar, go to the *Tools* menu, item *Tool Boxes*, and check the option *Alignment*.

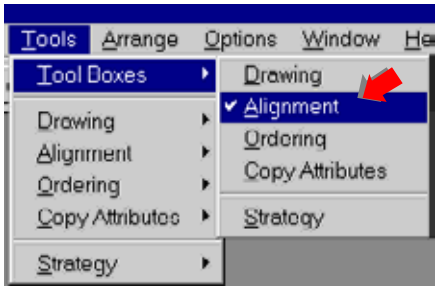


Figure 7.5. Tools Menu: Alignment Toolbar

The *Alignment* toolbar will open:

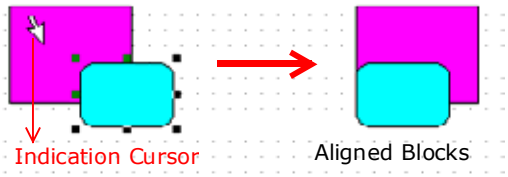
Figure 7.6. Alignment Toolbar

This toolbar has tools to arrange (or distribute) drawing objects so they are equal distances from each other (vertically or horizontally), or they are aligned by their edges or centers (vertically or horizontally).

- *Left* Button

Click this button to align the left side of the selected object(s) with the left side of the anchor.

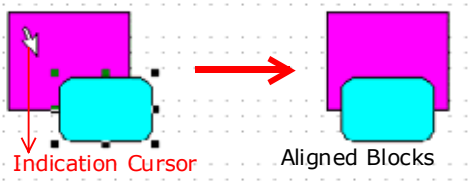
First, select the object (or objects) to be aligned. Then click the button and when the cursor is placed on the drawing area, it will change to an *Indication* cursor. Click the object that will be the anchor. See the figure:



- *Center* Button

Click this button to align the horizontal center of the selected object(s) with the horizontal center of the anchor.

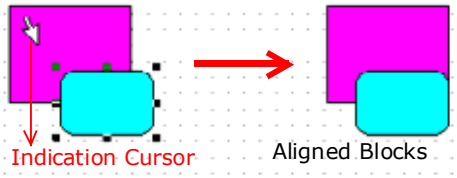
First, select the object (or objects) to be aligned. Then click the button and when the cursor is placed on the drawing area, it will change to an *Indication* cursor. Click the object that will be the anchor. See the figure:



- *Right* Button

Click this button to align the right side of the selected object(s) with the right side of the anchor.

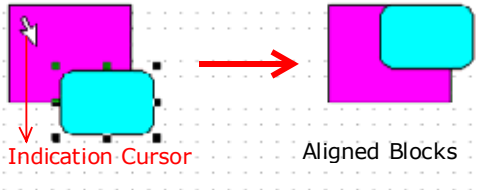
First, select the object (or objects) to be aligned. Then click the button and when the cursor is placed on the drawing area, it will change to an *Indication* cursor. Click the object that will be the anchor. See the figure:



- *Top* Button

Click this button to align the top of the selected object(s) with the top of the anchor.

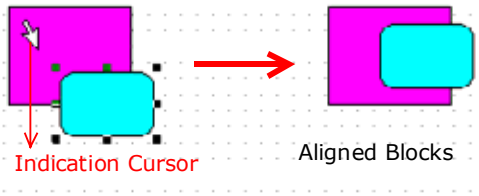
First, select the object (or objects) to be aligned. Then click the button and when the cursor is placed on the drawing area, it will change to an *Indication* cursor. Click the object that will be the anchor. See the figure:



- *Middle* Button

Click this button to align the vertical center of the selected object(s) with the vertical center of the anchor.

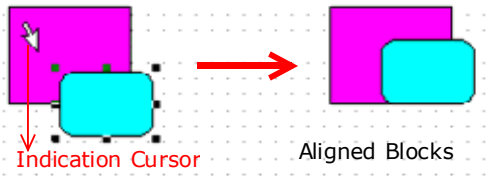
First, select the object (or objects) to be aligned. Then click the button and when the cursor is placed on the drawing area, it will change to an *Indication* cursor. Click the object that will be the anchor. See the figure:



- *Bottom* Button

Click this button to align the bottom of the selected object(s) with the bottom of the anchor.

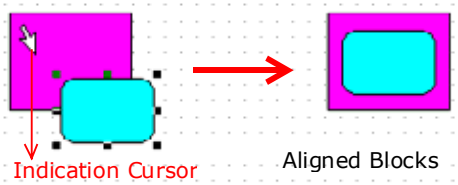
First, select the object (or objects) to be aligned. Then click the button and when the cursor is placed on the drawing area, it will change to an *Indication* cursor. Click the object that will be the anchor. See the figure:



- *Center Points* Button

Click this button to align the center of the selected object(s) with the center of the anchor.

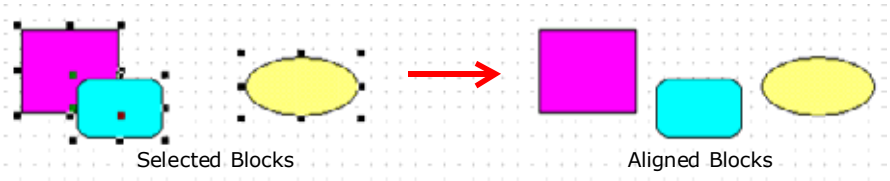
First, select the object (or objects) to be aligned. Then click the button and when the cursor is placed on the drawing area, it will change to an *Indication* cursor. Click the object that will be the anchor. See the figure:



- *Evenly Spaced - Horizontal* Button

Click this button to distribute the selected objects horizontally, so there is equal horizontal distance between the edges of all the objects. This button works only for three or more objects.

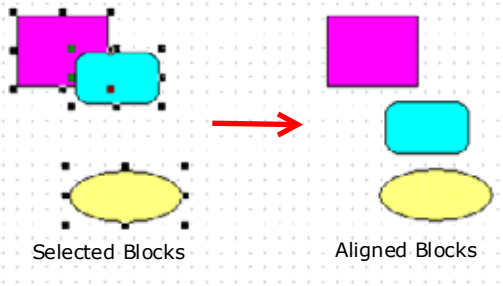
First, select all of the objects to be aligned, and then click the button. The objects will be promptly aligned. See the figure:



- *Evenly Spaced - Vertical* Button

Click this button to distribute the selected objects vertically, so there is equal vertical distance between the edges of all the objects. This button works only for three or more objects.

First, select all of the objects to be aligned, and then click the button. The objects will be promptly aligned. See the figure:



7.4 Ordering Toolbar

To activate the *Ordering* toolbar, go to the *Tools* menu, item *Tool Boxes*, and check the option *Ordering*.

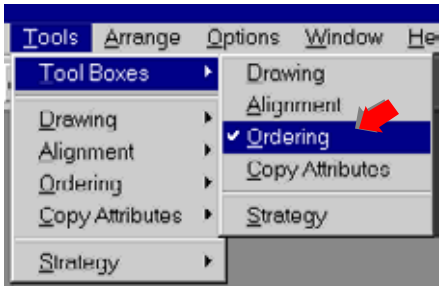


Figure 7.7. Tools Menu: Ordering Toolbar

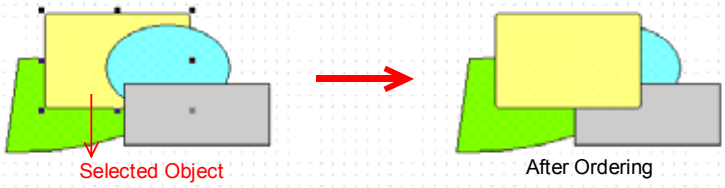
The *Ordering* toolbar will open:

Figure 7.8. Ordering Toolbar

This toolbar has tools to overlap as many drawing objects as desired and rearrange them in the stack.

***- To Front* Button**

Click this button to place the selected object in front of other overlapping objects. Select the object to be moved and click the button. See the figure:

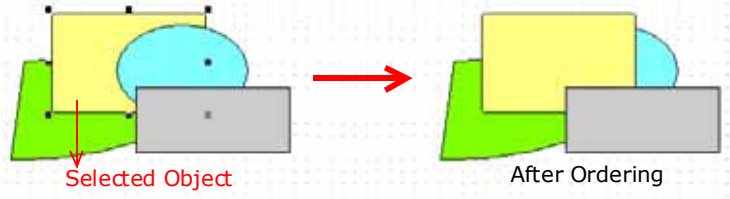


- *To Back* Button

Click this button to place the selected object behind other overlapping objects. Select the object to be moved and click the button. See the figure:

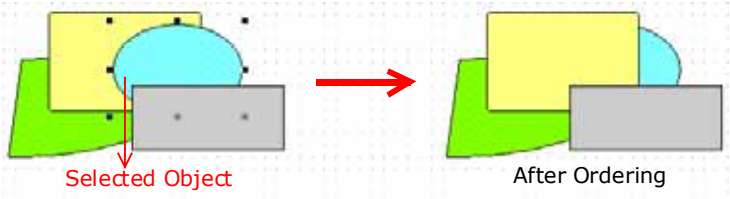
- *Forward One* Button

Click this button to move the selected object one position forward in the stacking order. Select the object to be moved and click the button. See the figure:



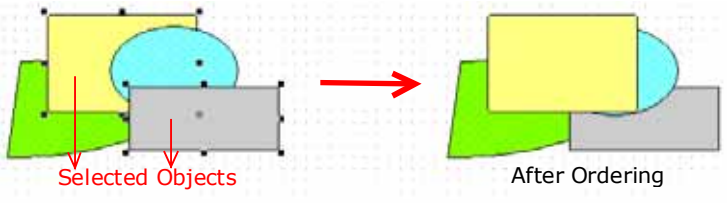
- *Backward One* Button

Click this button to move the selected object one position backward in the stacking order. Select the object to be moved and click the button. See the figure:



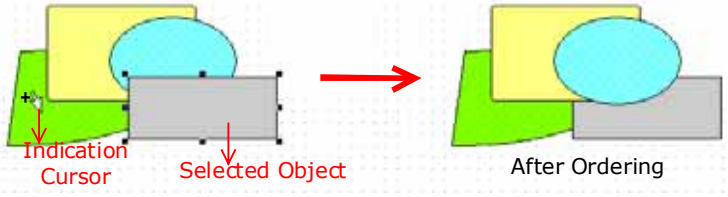
- *Reverse Order* Button

Click this button to reverse the stacking order of two selected objects. To select two objects, click the first object. Hold the key *Shift* pressed and click the second object. Click the button and the stacking order will be reversed. See the figure:



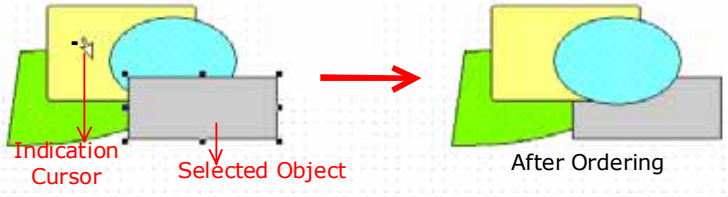
- *In Front Of* Button

Click this button to place the selected object in front of another object that will be the anchor. Select the object to be moved and click the button. When the cursor is placed in the drawing area, it will change to an *Indication* cursor with a plus sign, **+**. Click on the anchor object to conclude this task. See the figure:



- *Behind* Button

Click this button to place the selected object behind another object that will be the anchor. Select the object to be moved and click the button. When the cursor is placed in the drawing area, it will change to an *Indication* cursor with a minus sign, **-**. Click on the anchor object to conclude this task. See the figure:



7.5 Copy Attributes Toolbar

To activate the *Copy Attributes* toolbar, go to the *Tools* menu, item *Tool Boxes*, and check the option *Copy Attributes*.

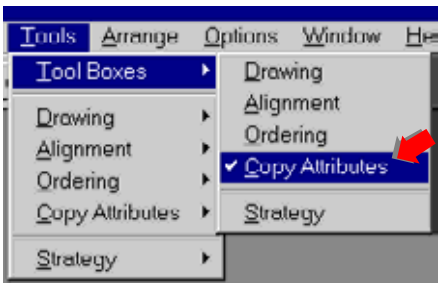


Figure 7.9. Tools Menu: Copy Attributes Toolbar

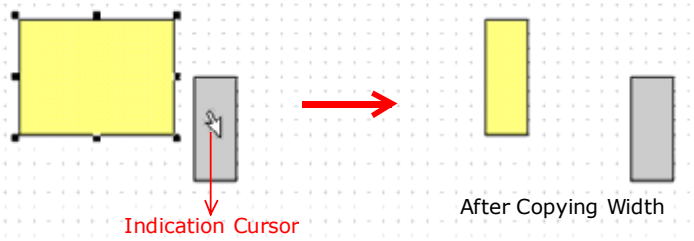
The *Copy Attributes* toolbar will open:

Figure 7.10. Copy Attributes Toolbar

This toolbar has tools that make an object(s) appearance equal to another object.

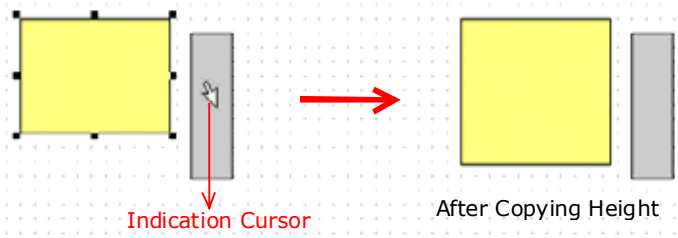
- *Same Width* Button

Click this button to copy the width from one object to another. Select the object that will have its width changed, and click the button. The cursor will change to an *Indication* cursor. Click the anchor object to copy its width and conclude this task. See the figure:



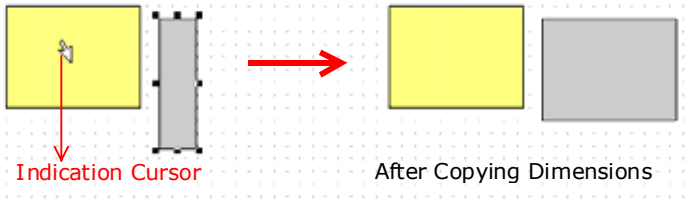
- *Same Height* Button

Click this button to copy the height from one object to another. Select the object that will have its height changed, and click the button. The cursor will change to an *Indication* cursor. Click the anchor object to copy its height and conclude this task. See the figure:



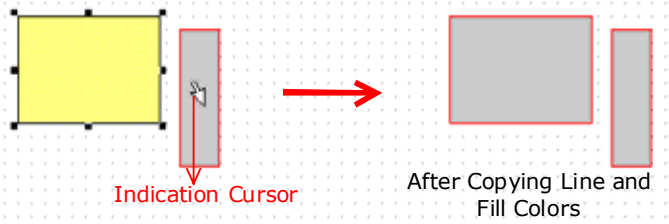
- *Same Dimensions* Button

Click this button to copy the width and the height from one object to another. Select the object that will have its dimensions changed, and click the button. The cursor will change to an *Indication* cursor. Click the anchor object to copy its dimensions and conclude this task. See the figure:



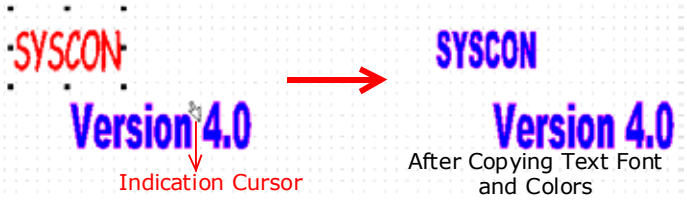
- *Same Pen & Brush* Button

Click this button to copy the line and the fill color from one object to another. Select the object that will have its colors changed, and click the button. The cursor will change to an *Indication* cursor. Click the anchor object to copy its colors and conclude this task. See the figure:



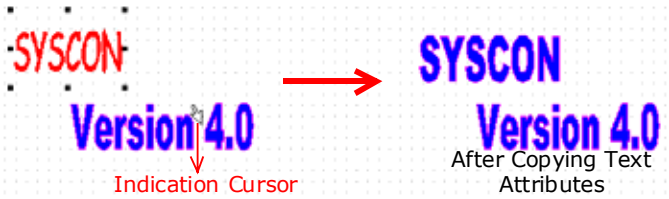
- *Same Font & Colors* Button

Click this button to copy the text font and colors from one object to another. Select the object that will have its font and color changed, and click the button. The cursor will change to an *Indication* cursor. Click the anchor object to copy its colors and conclude this task. See the figure:



- *Same Text Attributes* Button

Click this button to copy the text font, size and colors, from one object to another. Select the object that will have its text attributes changed, and click the button. The cursor will change to an *Indication* cursor. Click the anchor object to copy its colors and conclude this task. See the figure:



- *Set Attributes As Default Ones* Button

Click this button to set the objects attributes as default. Select the object that will have its attributes set as default and click the button. The objects will be drawn with the same line color, fill color, text font and text size as the object selected.

7.6 Topology Toolbar

The *Topology* toolbar is activated with the *Fieldbus Networks* window. In case it's not activated, go to the *Tools* menu, item *Tool Boxes*, and the option *Topology* should be checked.

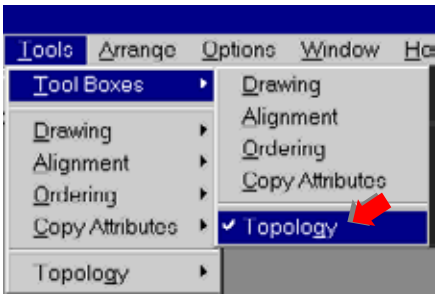


Figure 7.11. Tools Menu: Topology Toolbar

The *Topology* toolbar will open:

Figure 7.12. Topology Toolbar

- *Select* Button

Click this button to activate the *Select* tool. With this button selected, it is possible to select any object(s) at the *Fieldbus Networks* window for further operations, such as moving, resizing etc.

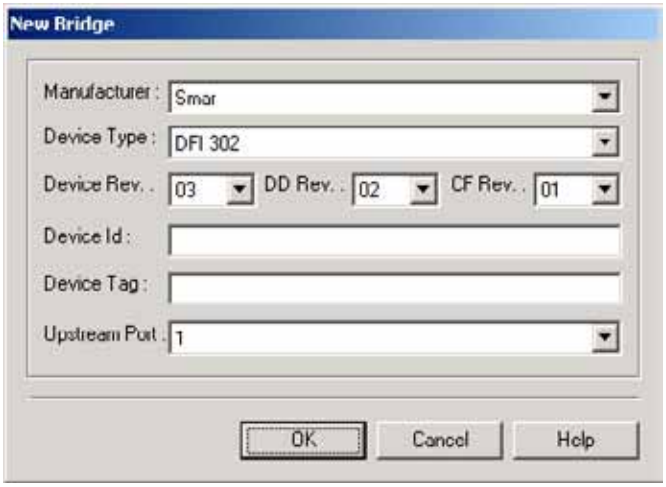
- *Topology Modify* Button

Click this button to activate the *Modify* tool. This tool is used to change an object's shape.

Use this tool to redraw *Links*: when the user selects a *Link*, the *Modifying Corners* appears. Drag them onto the drawing area to redraw the *Link*.

- *Dummy Bridge* Button

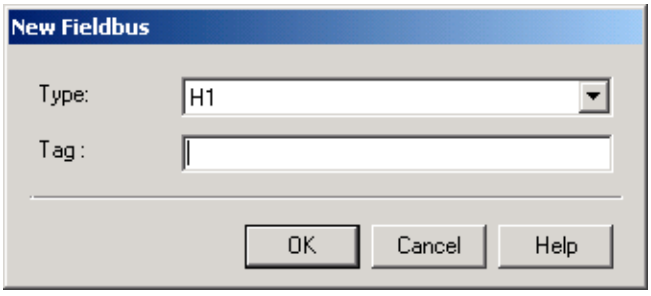
Click this button to create new *Bridges*. Click the drawing area with this button selected and the *New Bridge* dialog box will open.



Select the *Bridge* Manufacturer and Type, clicking the down arrows, and type the *Bridge* tag. The *Bridge* will be drawn after clicking *Ok*.

- *Fieldbus* Button

Click this button to create a new *Fieldbus*. Click the drawing area with this button selected and the *New Fieldbus* dialog box will open.



Select the communication port for the *Fieldbus* and type the tag. The *Fieldbus* will be drawn after clicking *Ok*.

- *Topology Link* Button

Click this button to create *Links* between a *Fieldbus* and a *Bridge*. Click the *Bridge*, select the port, and then click the *Fieldbus*. The *Link* will be drawn.

7.7 Characterization Toolbar

The *Characterization* toolbar is displayed in the *Block Characterization* dialog box.

Figure 7.13. Characterization Toolbar

- *Input* Button

Click this button to display the *Input Parameters* of the *Block*. An *Input Parameter* obtains its value from a source external to the *Block*.

- *Output* Button

Click this button to display the *Output Parameters* of the *Block*. An *Output Parameter* is a *Parameter* that may be linked to an *Input Parameter* of another *Function Block*.

- *Contained* Button

Click this button to display the *Contained Parameters* of the *Block*. A *Contained Parameter* is a *Parameter* whose value is configured, set by an operator, higher-level device or calculated.

- *Dynamic* Button

Click this button to display the *Dynamic Parameters* of the *Block*. *Dynamic Parameter* values are calculated by the *Block* algorithm and therefore do not need to be restored after a power failure.

- *Diagnostic* Button

Click this button to display the *Diagnostic Parameters* of the *Block*.

- *Service* Button

Click this button to display the *Service Parameters* of the *Block*.

- *Operate* Button

Click this button to display the *Operate Parameters* of the *Block*.

- *Alarm* Button

Click this button to display the *Alarm Parameters* of the *Block*. Alarms and events, known as alerts, represent state changes within *Function Block* applications.

- *Tune* Button

Click this button to display the *Tune Parameters* of the *Block*.

- *Local* Button

Click this button to display the *Local Parameters* of the *Block*.

- *Confirmed Edition* Button

If this button is highlighted, the user will change the *Parameter* value then click the *End Edit* button at the bottom of the *Characterization* window, or press the *Enter* key on the keyboard, to confirm the edition and accept the changes.

If this button is not highlighted, the user will change the *Parameter* value then click the *End Edit* button at the bottom of the *Characterization* window, press the *Enter* key on the keyboard, or click on another *Parameter* line, to confirm the edition and accept the changes.

- *Column Relative Index* Button

Click this button to display the *Relative Index* column.

- *Column Handling* Button

Click this button to display the *Handling* column.

- *Customization* Buttons

Click one of these buttons to display the *Parameters* for the *Block* according to the User customization – by *Block Type* or *Block Tag*. See the section *Customize Characterization* for further details.

- *Mark to Save* Button

This button is only available in the *On Line Characterization* Toolbar. Click this button to mark a *Parameter* value and save it even if it wasn't edited, or to unmark a *Parameter* that changed the value but the changes are not to be saved. See the section *Block On Line Characterization* for further details.

- *Show Value as Symbol* Button

Click this button to display the *Parameter* value as a symbol or as a numeric value.

- *DD Help* Button

Click this button to display the DD's help information about the *Parameters* at the bottom of the *Characterization* window.

7.8 General Operation Toolbar

The *General Operation* toolbar is automatically activated with SYSCON. It is placed under the *Main* menu.

Figure 7.14. General Operation Toolbar

- *New* Button

Click this button to create a project file.

See the section *New Project*.

- *Open* Button

Click this button to open a project file. See the section *Open*.

- *Save* Button

Click this button to save the project or any of its parts, such as the *Process Cell* window or the *Strategy* window. See the section *Save*.

- *Save All* Button

Click this button to save the entire plant project configuration. See the section *Save Entire Configuration*.

- *Cut* Button

Click this button to remove the selection from the project and place it on the clipboard.

- *Copy* Button

Click this button to copy the selection to the clipboard.

- *Paste* Button

Click this button to insert the contents of the clipboard at the insertion point. This command is available only if the user has cut or copied an object.

- *Print* Button

Click this button to print the project configuration, or the drawing objects at the *Strategy* window, or the drawing objects at the *Topology* window. See the section *Printing the Project Configuration*.

- *Print Preview* Button

Click this button to see how the project will be printed. The user can change the printer configuration and select the objects to be printed. See the section *Print Preview*.

***- Operation Mode* Button**

Click this button to toggle between the Operation Modes. If the button is clicked, SYSCON is operating in the *On Line* mode. Otherwise, it's in the *Off Line* mode.

***- Error Log* Button**

Click this button to open the *Error Log* window. This button will be activated if there was an error during a communication procedure.

***- Show/Hide* Button**

Click this button to show or hide detailed information about *Blocks* types, *Blocks Parameters*, *Devices* types and *Fieldbus MacroCycle*.

***- Contents* Button**

Click this button to open the SYSCON Help Contents.

8 Device Support

8.1 Including New DD and Capabilities File

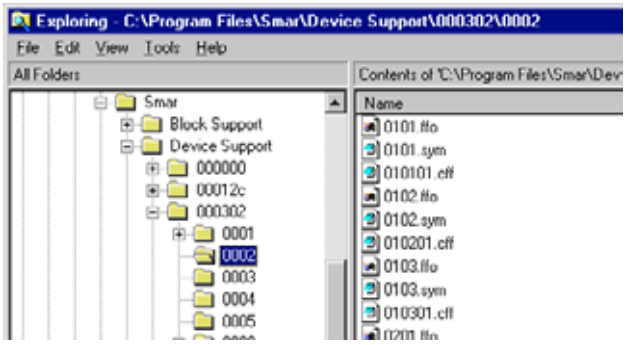
The *Device Description* for a particular *Device* is provided by the *Device*'s manufacturer and distributed by *Fieldbus Foundation*. If it is not currently available from the *Fieldbus Foundation*, the user may need to contact the manufacturer and get a copy of the *DD*.

There is a *DD* for each *Device* type, and it consists of the files whose extensions are "***.ffo***" and "***.sym***".

The *Capabilities File* is used to define the *Device* capabilities – e.g., dynamic block instantiation capability - and the resources available for creating *Function Block Applications*, *Resource Blocks*, *Transducer Blocks*, and *Function Blocks*.

There is a *Capabilities File* for each *Device* type. It consists of the files where the extensions are "***.cff***", and then are placed together with the *DD* files.

The files are organized in the manufacturers' folder as the following figure shows:



SYSCON needs *DD* and *Capabilities Files* in order to configure a *Device*.

Follow the steps below to add a new *DD* and *Capabilities File* to SYSCON:

1. Go to the *Device Support* installation folder.
2. Inside the *Device Support* folder, create a new folder for the manufacturer, if it is not yet there.
3. The folder name should be a 6 hexadecimal digits manufacturer's code, e.g., 000302 for **SMAR**.
4. Inside the manufacturer's folder, create the *Device Type* folder.
5. The name for this folder should be the 4 hexadecimal digits of the *Device Type* code, e.g., 0001 for the **LD302**.
6. Copy the *DD* and the *Capabilities Files* for the new *Device* from the corresponding folder to the newly created manufacturer and *Device Type* folders, inside the *Device Support* folder.

After that, SYSCON will be able to reference the new *DDs* in the dialog boxes for creation of *Devices* and *Blocks*, showing the *Manufacturer ID* and the *Device Type* code.

However, SYSCON will not be able to show the manufacturer name or the *Device* name. To show those names on SYSCON, the user must define them in the "**Device Support.ini**" file. See the section Defining Manufacturers and Device names.

If the *Device* supports dynamic instantiation of *Function Blocks*, the user must define the *Function Block Mnemonics*. See the section Defining a Block Mnemonic.

If the *Capabilities File* is not provided, the user can define it since the necessary information is available. See the section Creating a new Capabilities File.

8.2 Defining Manufacturers and Device Names

The file "**Device Support.ini**" in the folder *Device Support* maintains all definitions for the manufacturers' and *Devices'* names. The user may need to add definitions.

SYSCON gives the user the opportunity to define manufacturers' and *Devices'* names in order to show them in the dialog boxes when adding new *Devices* or new *Blocks* to the *Fieldbus Configuration*.

Follow the steps below to add new definitions:

1. Open the "**Device Support.ini**" file.
2. Create the new manufacturer in the **[Manufacturers By Id]** section.

The definition of the name for a particular manufacturer has the following format:

`<manufacturer_id> = <manufacturer_name>`

where

"*manufacturer_id*" is the 6 hexadecimal digits manufacturer's code;

"*manufacturer_name*" is the manufacturer's name that will appear in the dialog boxes.

Example:

```
[Manufacturers By Id]
000302=Smar
```

3. Create a section to maintain the new manufacturer's *Devices*.

The definition of the section for a particular manufacturer has the following format:

`[<manufacturer_id> Devices By Code]`

where

"*manufacturer_id*" is the 6 hexadecimal digits manufacturer's code.

Example:

```
[000302 Devices By Code]
```

4. Define the *Devices'* names in this new section.

The definition of the name for a particular *Device* has the following format:

```
<device_type_code>=<device_name>
```

where

"*device_type_code*" is the 4 hexadecimal digits of the *Device Type* code;

"device_name" is the *Device's* name that will appear in the dialog boxes.

Example:

```
0001=LD 302
```

8.3 Creating a new Capabilities File

If the *Capabilities File* is not provided, it can still be defined since the user already has the necessary information.

The source of information may be the *Device Manufacturer*, the *Device* itself or the old "***.ini*** " or "***.drf*** " *Resource Files*.

Follow these steps to define a *Capabilities File*:

1. Copy the template file "**Capabilities.cff**" at the SYSCON folder.

2. Go to the *Device Support* installation folder and paste it in the *Device* folder corresponding to the *Device* being created in the *Capabilities File*.

3. Rename the file to match the corresponding *DD* files.

4. Edit the template file and provide all of the necessary information.

5. If the *Device* supports dynamic instantiation of *Function Blocks*, the *Function Block Mnemonics* will still have to be defined in the file "**Device Support.ini**".

If there is any *Block Mnemonic* missing, then add its definition to the "**Device Support.ini**" file. See the section Defining a Block Mnemonic.

8.4 Defining a Block Mnemonic

When defining a *Capabilities File* for a *Device* that can dynamically create instances of *Function Blocks*, the user must create a section for each one of these *Blocks* in the "***.cff*** " file.

The *Function Block Mnemonic* names those sections. Therefore, the user should define each of the *Function Blocks Mnemonics*, so that SYSCON can identify the *Blocks*.

Blocks Mnemonics are defined in the file "**Device Support.ini**", located in the *Device Support* folder, in a section named "**[Block Type Mnemonics]**".

Inside this section, the definition of the *Mnemonic* for a particular *Function Block* has the following format:

```
[Block Type Mnemonics]
<m_id> <d_type> <d_revision> <dd_revision>
<block_dditemid>=<block_mnemonic>
```

where:

`<m_id>` is the 6 hexadecimal digits manufacturer's code;

`<d_type>` is the 4 hexadecimal digits of the *Device Type*;

`<d_revision>` is the *Device Revision*;

`<dd_revision>` is the *DD Revision*;

`<block_dditemid>` is the *DDItemId*;

`<block_mnemonic>` is the *mnemonic* for the *Block*.

Example:

```
[Block Type Mnemonics]
000302 0001 01 02 800202B0=PID
```

where:

`000302` is the **SMAR** manufacturer code;

`0001` is **LD302** *Device Type* code;

`01` is the *Device Revision*;

`02` is the *DD Revision*;

`800202B0` is the *DDItemId* for the *Block PID*.

Just follow this pattern to add new definitions.

9 Troubleshoot

1. ***Version Mismatch***
   Converting from an older configuration version.
   For discarding, close without saving.

This is a message, not an exception. It means that the user is trying to open a configuration file, which was generated in an older version of the tool that had an old-fashioned file format. If the user accepts to upgrade, the configuration is going to be converted to the new file format and the user won't be able to open the configuration in a version of the tool, which supports the old file format again. This message is only issued by SYSCON from version 5.10 on.

2. ***Version Mismatch***
   Unable to open a newer configuration version.

This is a message, not an exception. It means that the user is trying to open a configuration file, which was generated in an earlier version of the tool that has a new file format. SYSCON cannot perform configuration downgrade. This message is only issued by SYSCON from version 5.10 on.

3. ***DD Exception***
   Standard Dictionary Not Found!

This means that the **Standard.dct** file is missing in the *Device Support* and can generally happen because of problems during the system installation.

4. ***FF Exception***
   Block with Profile 0x#### and Profile Revision 0x#### could not be found.
   DD and CF: ######\####\####(##).
   DDItem = 0x########

This happens because some block type could not be recognized. It means there were problems with DDs or CFs installation. During the opening of a configuration file it has a special meaning, and it can easily be identified by the null Profile and Profile Revision numbers. In this case SYSCON is trying to upgrade a configuration generated with an old version of SYSCON (4.x or earlier) that didn't work - therefore did not retain the numbers. During the configuration file upgrade, SYSCON tries to get the Profile and Profile Revision for the blocks in the configuration by searching the CF given the DDItemID for the block. This FF exception occurs because the CF is not present or, in case the CF exists, the exception occurs because the CF might be inconsistent. It is very common when a configuration is generated in one machine and moved to another one that maintains a different set of DDs and CFs from the original machine. The DD and CF information in the message identifies which CF file has been searched.

5. Maximum number of Blocks has been exceeded. License Violation

It means that the user is trying to open a configuration that has more blocks than the SYSCON license allows. This usually happens when the project file has been generated with a SYSCON version that supports the number of blocks configured in the project, but the user is trying to open the project with another SYSCON version with a license that allows less blocks than has been configured in the project file.

6. DD Not Found

If SYSCON tries to use a DD file that is missing or corrupted, the *Device Description Error* message will be sent to the user through the *Error Log* window. This message indicates the DD file that is missing or corrupted and reports the details about the error.

There is one situation that a missing DD will stop the application. When a configuration file is generated with SYSCON version 4.x, or previous versions, and the user attempts to open the file with SYSCON version 5.22, the application will generate an exception indicating the information that is missing and will abort after the user acknowledgement.

7. The HSE port of the DFI has address 0

This problem may occur when:

- The address wasn't read because the *Bridge* was not found in the Live List.
- The *Bridge* was not in the *Live List* during the *Init Communication*.

These conditions mean that the problem occurs rarely. If it occurs, it will be necessary to terminate the communication and restart it.

8. Multilink Topology Request

This dialog box will open when SYSCON tries to re-initialize the communication after an event occurs, for example, when the *Bridge* stop communicating for a moment and then return to normal operation.

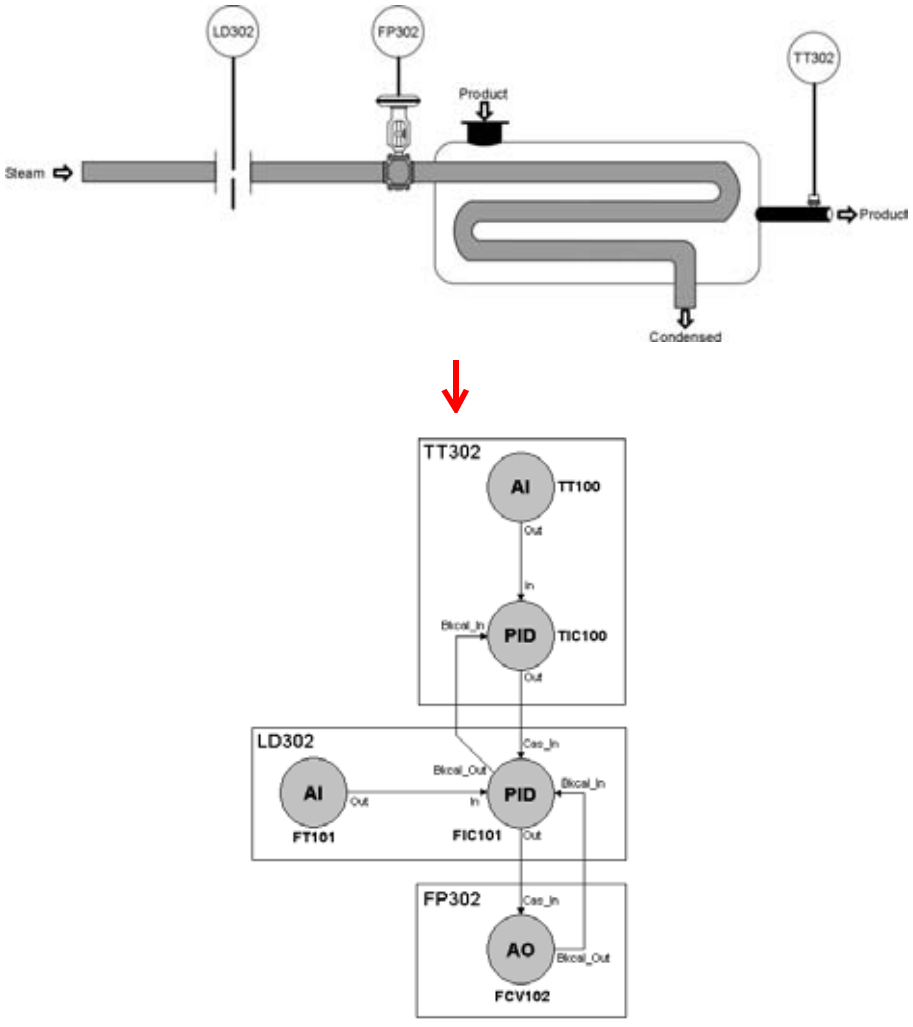
Appendix: Step-by-Step Configuration

The first example starts the configuration from the *Logical Project*.

The second example starts the configuration from the *Physical Project*.

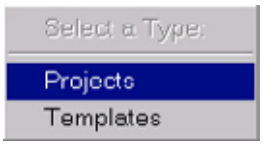
It is recommended that the user start with the *Logical Project Configuration* and then import *Templates* files to the *Strategy* window. This way the user can easily add *Blocks* to the project to be more productive.

In this *Fieldbus* configuration example, the *Analog Input*, the *PID Control* and the *Analog Output Blocks* will be used to build the following Cascade Control configuration:

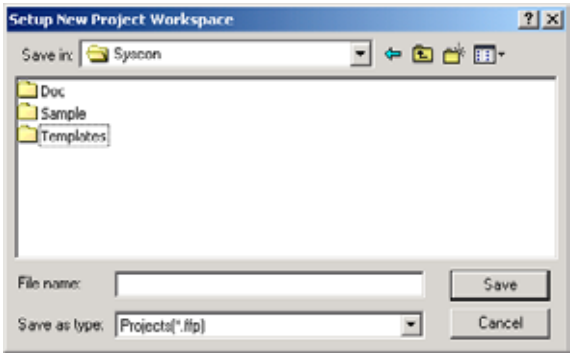


Creating the Project File

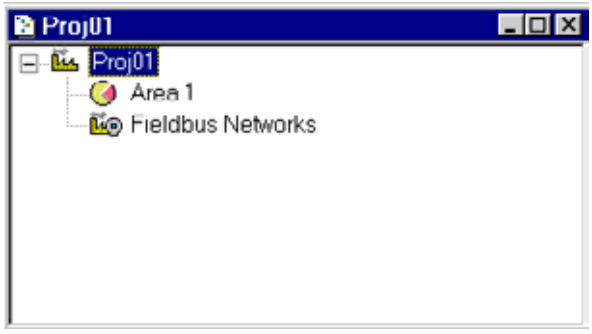
To create a new *Fieldbus* project, click the *New* button, , on the *General Operation* toolbar. The *Document Type* box will appear. Click the option *Projects*, as indicated below:



The *New Project* dialog box will open:

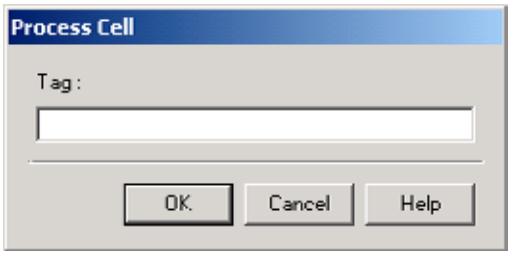


Type the name for the new project at the *File Name* box, and then click *Save*. The *Project* window will open.



Starting with the Process Control Configuration

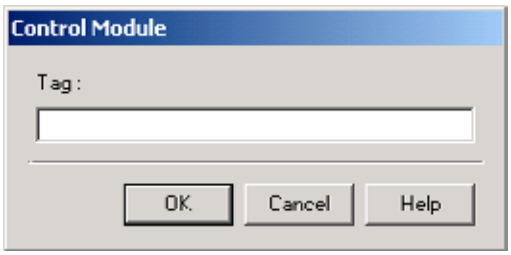
At the *Project* window, right-click the *Area1* icon and click the item *New Process Cell*. The *Process Cell* dialog box will open.



Type the *Process Cell* tag and click *Ok*.

Double-click the *Process Cell* icon to open its own window. To organize the screen view, go to the *Window* menu and click *Tile*.

Now add the *Control Module*. Select the *Process Cell* icon, on the *Process Cell* window, and right-click it. Click the item *New Control Module*. The *Control Module* dialog box will open.



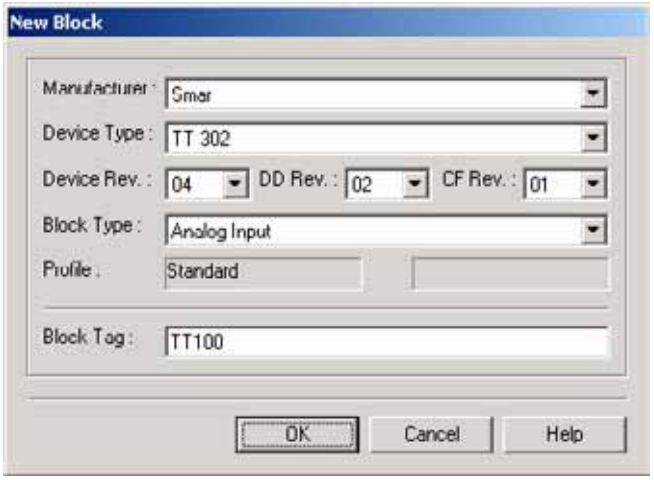
Type the *Control Module* tag and click *OK*.

Adding Blocks

Now add the *Blocks* that will be used at the design configuration.

Right-click the *Control Module* icon and select the item *New Block*. The *New Block* dialog box will open:

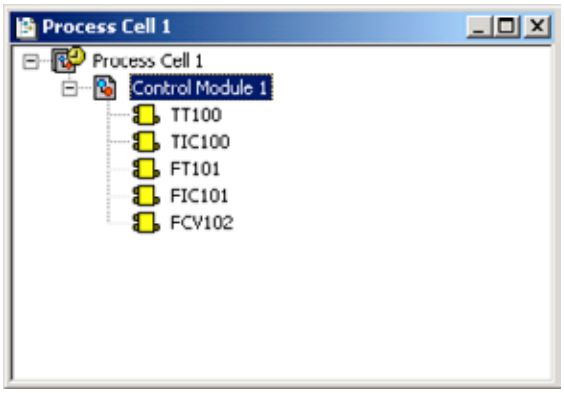
1. Select *Smar* in the *Manufacturer* box.
2. Select the *TT302 Device* in the *Device Type* box.
3. Select *Analog Input* in the *Block Type* box.
4. Type the tag *TT100*, or any other related tag, in the *Block Tag* box.
5. Click *OK*.



Repeat the procedure from above to add the following *Blocks*:

Device	Block Type	Block Tag
TT302	PID Control	TIC100
LD302	Analog Input	FT101
	PID Control	FIC101
FP302	Analog Output	FCV102

The *Process Cell 1* window should look like the following figure:



Now would be a good time to save the project. Click the *Save All* button, , on the *General Operation* toolbar. It will automatically save the changes in the project folder. It is recommended to save the project anytime changes have been made.

Continuing with the Fieldbus Configuration

Create a *Fieldbus*. Right-click the *Fieldbus Networks* icon. Click the item *New Fieldbus*. Select the communication port for the *Fieldbus*, type the tag and click *Ok*.

Double-click the *Fieldbus* icon to open its window.

To add the *Devices*, select the *Fieldbus* icon, on the *Fieldbus* window, and right-click it. Click the item *New Device*.

First, add the Smar *Temperature Transmitter – TT302*.

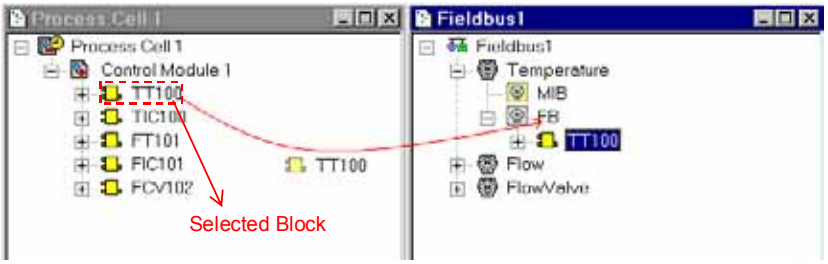
1. Select *Smar* in the *Device Manufacture* box.
2. Select the *TT302 Device* in the *Device Type* box.
3. Type the tag *Temperature*, or any other related tag, in the *Device Tag* box.
4. Click *OK*.

Follow the same procedure to add the Smar *Flow Transmitter – LD302*, and the Smar *Flow Valve Controller – FP302*.

The next step will be to attach the *Blocks*, from the *Control Module* to the *Devices*.

Open the *Fieldbus* window and the *Process Cell* window. Arrange these windows side by side by clicking the item *Tile* at the *Window* menu.

At the *Process Cell* window, click on the *Block* that will be attached and drag it to the corresponding *Device*, at the *Fieldbus* window.



The *Block* will be attached to the *Device*.

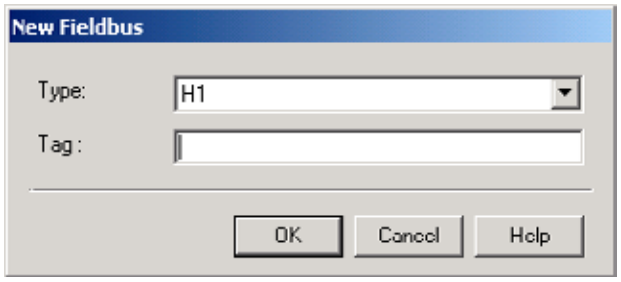
Repeat this operation to attach all *Blocks* to the *Devices*, according to the table below:

Device	Block Tag
Temperature	TT100
	TIC100
Flow	FT101
	FIC101
Flow Valve	FCV102

When all of the blocks are attached, the user will have to drag the *Blocks* to the *Strategy* window to start the design configuration.

Starting with the Fieldbus Configuration

At the *Project* window, right-click the *Fieldbus Networks* icon and click the item *New Fieldbus*. The *New Fieldbus* dialog box will open. Select the communication port for the *Fieldbus*, type the tag and click *Ok*.



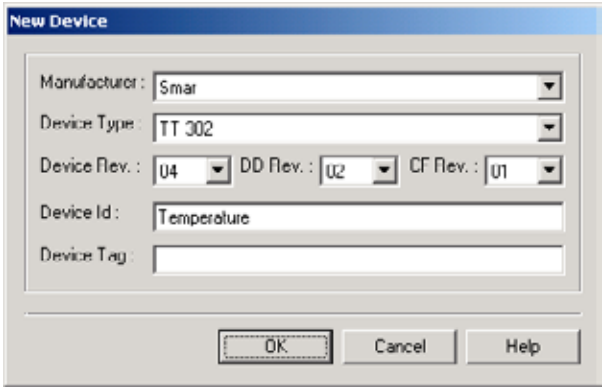
Double-click the *Fieldbus 1* icon to open its window. To organize the screen view, go to the *Window* menu and click *Tile*.

Now add the *Devices* that will be used in this project.

First, add the Smar *Temperature Transmitter – TT302*.

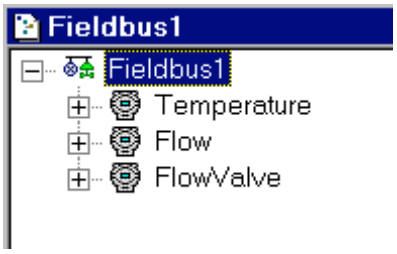
At the *Fieldbus 1* window, right-click the *Fieldbus1* icon, then click the item *New Device*. The *Device* dialog box will open:

1. Select *Smar* in the *Device Manufacture* box.
2. Select the *TT302 Device* in the *Device Type* box.
3. Type the tag *Temperature*, or any other related tag, in the *Device Tag* box.
4. Click *OK*.



Follow the same procedure to add the Smar *Flow Transmitter – LD302*, and the Smar *Flow Valve Controller – FP302*.

After finishing this process, the *Fieldbus 1* window should look like the following figure:



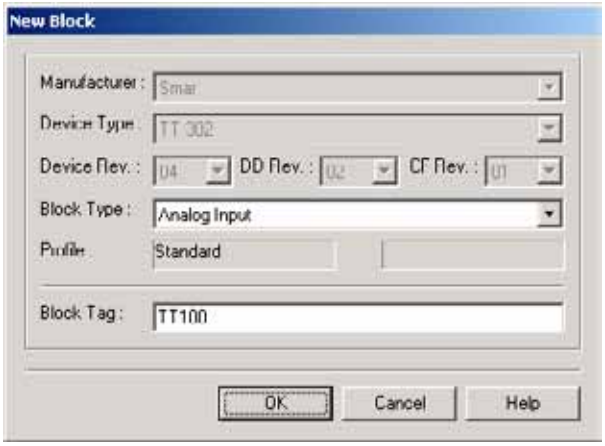
Adding Blocks

Now add the *Blocks* that will be used at the design configuration.

To add a new *Block*, click the *Device* expansion sign, ⊞, select the *FB* icon and right-click it. Click the item *New Block*.

The *New Block* dialog box will open. Add the first *Block*:

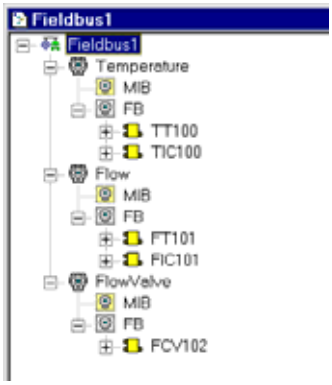
1. Select *Analog Input* in the *Block Type* box.
2. Type the tag TT100, or any other related tag, in the *Block Tag* box.
3. Click *OK*.



Repeat the procedure from above to add the following *Blocks*:

Device	Block Type	Block Tag
Temperature	PID Control	TIC100
Flow	Analog Input	FT101
	PID Control	FIC101
Flow Valve	Analog Output	FCV102

The *Fieldbus* window should look like the following figure:



Remember to save the project.

Continuing with the Process Control Configuration

Create a *Process Cell*. Right-click the *Area* icon. Click the item *New Process Cell*. Type the *Process Cell* tag and click *OK*.

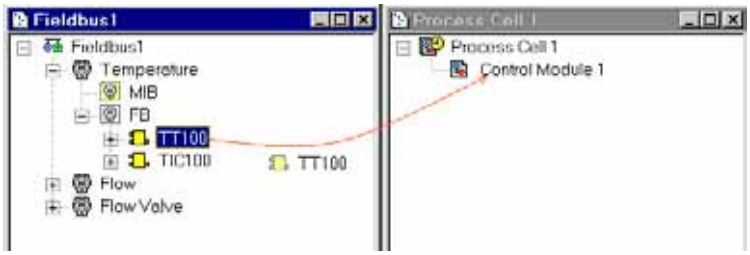
Double-click the *Process Cell 1* icon to open the window.

To create a *Control Module* select the *Process Cell* icon, on the *Process Cell* window, and right-click it. Click the item *New Control Module*. Type the *Control Module* tag and click *OK*.

The next step will be to attach the *Blocks*, from the *Devices* to the *Control Module*.

Open the *Fieldbus* window and the *Process Cell* window. Arrange these windows side by side by clicking the item *Tile* at the *Window* menu.

At the *Fieldbus* window, click on the *Block* that will be attached and drag it to the *Process Cell* window, on the *Control Module* icon.



The *Block* will be attached to the *Control Module*.

Repeat this operation to attach all *Blocks* to the *Control Module*.

When all of the blocks are attached, the user will have to drag the *Blocks* to the *Strategy* window to start the design configuration.

Creating the Strategy

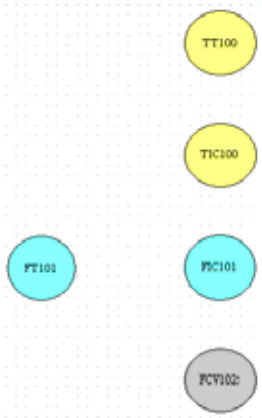
Now make the design configuration. Double-click the *Control Module* icon to open the *Strategy* window.

Drag the *Blocks* from the *Control Module* (or from the *Fieldbus* window) to the *Strategy* window:

1. Click and hold the *TT100 Block* icon, TT100 .
2. Drag it into the *Strategy* window.

The *Block* will automatically be drawn.

Repeat the procedure and drag the other *Blocks* to the *Strategy* window, trying to position them according to the project design presented at the beginning. See the following figure:



NOTE

If the *Block* is dropped very close to one already added to the *Strategy* window, the *Block* will not be drawn. It will be necessary to move the *Blocks* in order to organize the *Project*, after they have been dropped in the *Strategy* window.

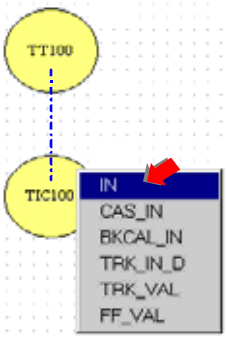
Remember that it is possible to change the *Blocks* attributes and select different colors for each one.

Linking Blocks

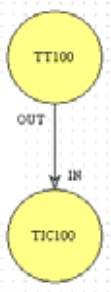
First, link the *OUT Parameter* of the *TT100 Block* to the *IN Parameter* of the *TIC100 Block*:

1. Click the *Link* button, , on the *Strategy* toolbar.
2. Right-click on the *Block* tagged *TT100*.
3. Click *OUT* in the popup menu.

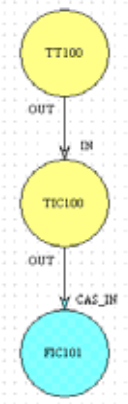
4. Drag the cursor to the *Block* tagged *TIC100*.
5. Right-click on the *Block*.
6. Select *IN* from the *Parameters* List.



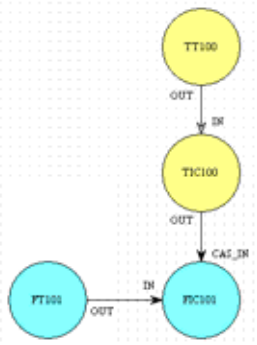
The linking process is complete.



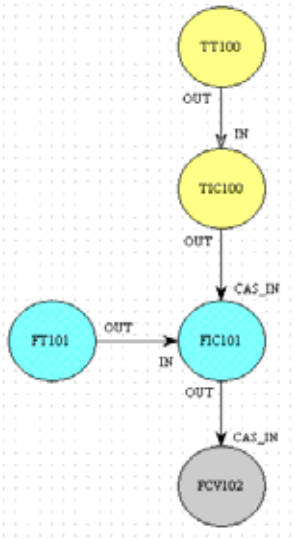
Follow the steps above to link the *OUT Parameter* of the *TIC100 Block* to the *CAS_IN Parameter* of the *FIC101 Block*.



Repeat the process and link the *OUT Parameter* of the *FT101 Block* to the *IN Parameter* of the *FIC101 Block*.

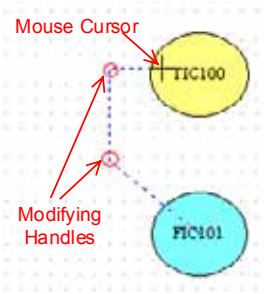


Then, link the *OUT Parameter* of the *FIC101 Block* to the *CAS_IN Parameter* of the *FCV102 Block*. The *Strategy* window should look like the following figure:



To create the *Feedback Link* between *FIC101* and *TIC100*, follow these steps:

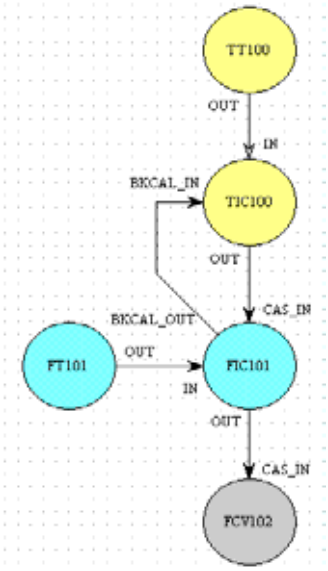
1. Right-click on the *FIC101 Block*.
2. Select *BKCAL_OUT* from the *Parameters* List.
3. Drag the cursor diagonally to the left side of the middle.
4. Click on the drawing area.
5. Continue dragging the cursor vertically until the *Link* line is near the *TIC100 Block*.
6. Click on the drawing area.
7. Drag the *Link* line horizontally until it reaches the *TIC100 Block*.



To conclude the *Link*:

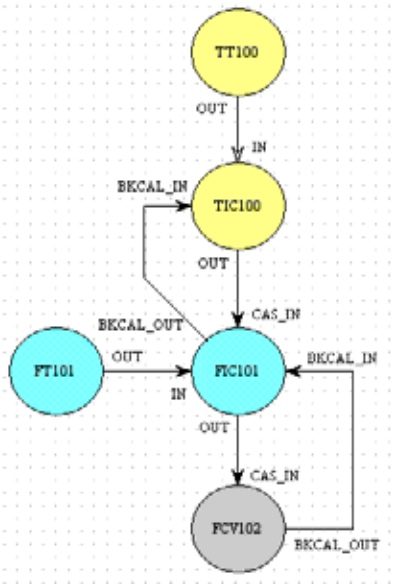
8. Right-click on the *TIC100 Block*.
9. Select *BKCAL_IN* from the *Parameters* List.

The design configuration should look like the following figure:



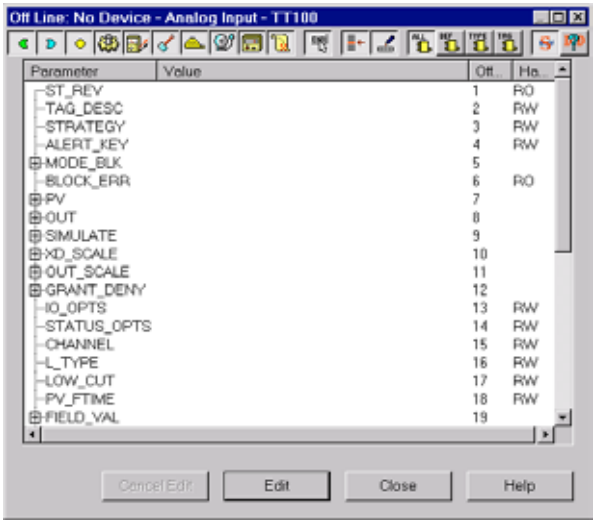
Follow these steps above to link the *BKCAL_OUT Parameter* of the *FCV102 Block* to the *BKCAL_IN Parameter* of the *FIC101 Block*.

At the end of the linking process, the *Strategy* window should look like the following figure:



Block Off Line Characterization

Parameterize the *TT100 Block*. Double-click the *Block* in the *Process Cell* window or *Fieldbus* window. The *Block Characterization* dialog box will open:



Click the expansion sign, ⊞, in front of the *MODE_BLK Parameter*. Select the element *TARGET* and click *Edit*.

Select the mode *Auto* from the list by checking its box. Click *End Edit*.

To exit the *Block Characterization* dialog box click the *Close* button.

Repeat this procedure to characterize the other *Blocks*. The following table specifies the *Parameters* and its elements:

Block	Parameter	Element	Mode
TIC100	MODE_BLK	TARGET	Auto
	PV_SCALE	EU_100	600
		EU_0	0
		UNITS_INDEX	°C
	OUT_SCALE	EU_100	200
		EU_0	0
		UNITS_INDEX	kg/h
FT-101	MODE_BLK	TARGET	Auto
	XD_SCALE	EU_100	200
		EU_0	0
		UNITS_INDEX	inH2O
	OUT_SCALE	EU_100	200
		EU_0	0
		UNITS_INDEX	kg/h
	L_TYPE		Indirect Sq Root
FIC-101	MODE_BLK	TARGET	Cas
	PV_SCALE	EU_100	200
		EU_0	0
		UNITS_INDEX	kg/h
	OUT_SCALE	EU_100	100
		EU_0	0
		UNITS_INDEX	%
FCV-102	MODE_BLK	TARGET	Cas
	PV_SCALE	EU_100	100
		EU_0	0
		UNITS_INDEX	%
	XD_SCALE	EU_100	15
		EU_0	3
		UNITS_INDEX	psi

It would be a good idea to save the project file before continuing with the configuration.